

Vol. I. AUG. 1919. No. II.

COMMERCE & INDUSTRIES

The Industrial Commission has been sitting investigating the opening for the profitable employment of Indian capital in commerce and industry. But we do not want merely Indian capital. We want Indian men, and not Indian men only as labourers, but as leaders who will turn their attention to industrial enterprise and equip themselves for a great industrial regeneration in India. We want to see men devote themselves to scientific research. We want to divert some of the great stream of students which now pours into the channels leading only to the clerical and legal professions, into the channels which will lead to industrial and commercial enterprise. We have now before us the Report of the Industrial Commission which tells us this may be done. I can assure you that in the case of this Report, too, I have no intention of letting its volumes moulder upon our shelves. Action has already been taken upon, and before a year elapses, I hope to see the foundations laid of a scheme for progressive industrial development in India. But let me once more emphasise the point that it is men that we want to do this thing."—H. E. LORD CHILMSFORD, Dec. 16th, 1918.

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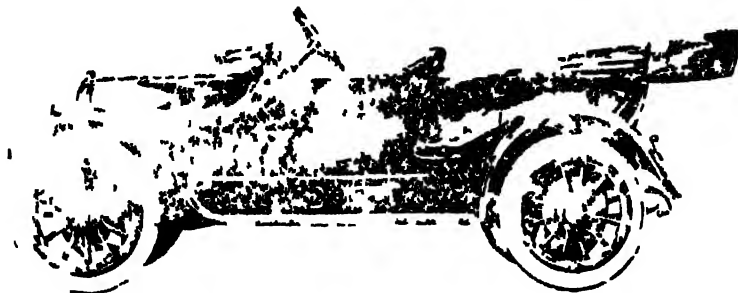
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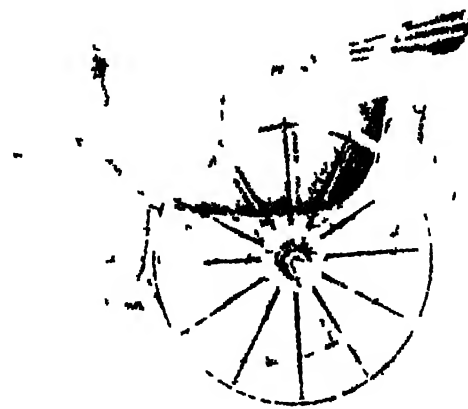
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"COMMERCE & INDUSTRIES"

Vol. I

AUGUST 1919

No. II.

COMMENTS OF THE MONTH.

THE past month was full of events calculated to help, others to hamper, the progress of international commercial intercourse. Two waves of labour unrest passed over Britain. The cotton operatives in Lancashire struck work—and though, happily, they have returned it now, the strike has not been without its influence on the Indian cloth market. Cloth prices, especially those of Manchester, rose steadily with a tendency to rise. There was, however, no demand, buyers being reluctant to stock at the enhanced prices, especially after the experience of some speculation on the market when a sharp and sudden fall occurred. This reluctance is specially noteworthy and all factors point to a rise rather than a fall in prices.

The other strike wave which passed over Britain related to her coal industry. The country was faced with increased costs and a diminishing output of coal, and it was found that the required quantity of coal would not be forthcoming unless prices were advanced by about 6s. a ton. This rise in prices fell upon labour as well as on others, enhancing their cost of living, and the cry of profiteering was at once raised. Some difference of opinion as to the increase of piece-rate wages of miners upon the basis of the Sinker Report. Labour maintaining that they deserved more than was offered them—provided the lighted match to set fire to the highly combustible material of labour discontent—and the Triple Alliance, comprising of miners, railwaymen and transport workers, spread over the whole of the northern districts, struck work. Thanks to the tact and skill of the Premier, the trouble has ended for the present.

This fact is not without interest and significance to this country—it would be imprudent fully to depend upon Britain for our coal in future, if we are to carry out any substantial programme of industrial development. We note that in the pre-war year 1912-13, we imported 651,000 tons of coal, coke and patent fuel valued at Rs. 1,16,71,000. In war time this steadily declined till it was only 19,000 tons valued at Rs. 15,14,000 in 1916-17. On the other hand, our export of coal, coke and patent fuel which stood at 81,000 tons in 1912-13 valued at Rs. 85,99,000, showed a steady decline in 1913-14 and 1914-15, but thenceforth recovered and steadily till it stood in 1916-17 at 82,000 tons valued at Rs. 76,22,000.

Indian coal production has shown some substantial progress in the last two decades or more. Towards the close of the last century, our production of coal amounted, we believe, to something considerably less than five million tons. In 1916-17, it was something over seventeen and a quarter million tons. At present the annual production is well over 19 million tons. Our future in this respect is not after all so gloomy as some think it is. Progress in mining will add to our source of mechanical power, not to mention the immense possibilities of generating hydro-electric energy. Then, it is not without the range of possibility that our oil resources might be more than we think they are. The officers of the Geological Survey are ever on the look out to find out and record possibilities, and in one of the latest Reports of the Survey, some regions in and about Kashmir are reported

to be petroliferous. But these are the regions for daring prospectors and we leave these to them.

To pass on from possibilities and probabilities to actualities, which would be of more immediate interest to the practical businessman, we should notice the discovery of coal deposits on an extensive area in Burma. The Associated Press message which conveyed the news late in the month was too brief to give us an adequate idea of the event. The newspaper comment which accompanied it held out more alluring prospects, though it was not more informing. We prefer to wait for details. By the way, we may point out that Indians should not forget that Burma is an economic complement to India as it is a geographical and historical one—a field which deserves and is in need of all their enterprise. The cry of Burma for Burmans has no doubt been set up, but it is bound to fail, if only our businessmen there do not arrogate any position of superiority to themselves. Let them but remember that their country of adoption deserves as much respectful gratitude as their mother country and that the former's children are as much their brethren as their own countrymen and then there will be no trouble.

What we have noted above are not the only noteworthy matters that happened in the month abroad. France was troubled with some labour unrest but matters there though serious at one time, have now become almost normal, so that the country may devote herself to her programme of reconstruction. That programme, let us remember, is no small matter. American correspondents point out that the districts of France once under enemy occupation are virtually deserts. Orchards, fields, factories and workshops which but five years ago beautified them and testified alike to the industrious thrift of the French peasant, the patient skill of French artisans, and the daring, successful enterprise of French entrepreneurs are now in ruins beyond repair, beyond even recognition. However the Reconstruction Board has now set itself to carry out the mighty task of replanting her industries with American credit and American machinery, but it will be some time before she establishes her export industries on a firm footing.

The immediate economic outlook in Germany is at least as bad as, if not considerably worse than, that in France. The British Mission to Germany under Major Bertie discloses a state of things, which is really harrowing, even children are allowed, it appears, to starve, and we are told that German babies three years old, now weighed no more than they did at the end of their first year. There is, however, one difference between the state of things in Germany and that in France and that is that the latter's recuperative powers are insignificant compared with those of the Hun. An acute observer, Canon Parit, has it that Germany is only waiting to see the blockade raised to resume her trade offensive so prepared she is to push up her productive activities. This is no wonder for her manufacturing districts were not under the occupation of a devastating and rapacious army, her plant, machinery and equipment are practically intact and as they were before the war Germany is a disturbing element in the calculations of entrepreneurs elsewhere and this is a point which renders them nervous about launching big schemes without assured Governmental protection.

The other European States, if struck less hard by the war, still require the support of the greater nations. The countries included in the term South-eastern Europe are more agricultural than industrial, and, as is the case with all agricultural communities, their recuperative powers are greater than those of the manufacturing countries. Rumania, Greater Serbia, Bulgaria, Turkey, Greece, Hungary, Poland and the Baltic States fall within this category. They will have no food problem to face they may even be able to export food. Such is not, however, the case with, say, Belgium, Finland and Czecho-Slovakia. These depend for their food on the export of their manufactures, these countries, however, have been the scenes of terrible warfare, and their manufacturing power is limited, owing to the destruction of their machinery. It requires all the ingenuity and care of the Supreme Economic Council to guarantee them raw materials and food and so to utilise their work as to make them be of the greatest advantage to the world.

Russia is still an uncertain element. The efforts of Britain to help her come to herself

through the castigations administered through Admiral Koltchak have been unavailing, and Britain has determined to let the flames of the Red Peril die out of their own accord, the Allies merely guarding their own houses against its spread. Experience has proved that this policy is the most prudent one. It is one that has been found acceptable to the British nation and it imposes the least burden on them for it obviates the need for a large and costly standing army and a strong navy on a war footing. The resultant demobilisation will provide the much needed labour force to rehabilitate British industries.

The great continent on the Far West to which we must now turn, is just at present faced, so Renter reports, with a Negro rebellion on an immense scale. The area affected is Chicago. More than a hundred thousand men are, it is said, engaged on either side—the side of the Negroes and that of the white population. The collision is most regrettable, occurring, as it does, in a period of world ferment. The immediate cause of the trouble is said to be the encroachment by the Negroes on what was declared to be a white area. We say *immediate* advisedly, for the Negroes have long standing grievances against the whites. There is no political equality between the two sections of the population.

* * *

The famous Fifteenth Amendment to the United States Constitution guaranteed equality of rights to the Negro, but the legislatures in the various States in whose province lay the determination of the qualification of voters and candidates to the legislature made the amendment a dead letter by prescribing high educational and other qualifications which the Negro lacked. Again, the administration of justice as between the white and the coloured was not quite impartial and Negroes were lynched with impunity. As the Negroes advanced in education and realised their position, they grew furious. It required all the gentle persuasiveness and reasonableness of the great Negro, Dr. Booker T. Washington to keep this combustible material off the lighted match. But Dr. Booker T. Washington is now dead three years. Let us hope the trouble will soon be over.

To pass on from this unpleasant temporary turmoil. The United States is now suffering from over prosperity. Her gold reserves have been considerably over-strengthened by the prevalence of war conditions in Europe. Her proper *role* now is that of the philanthropic minister practising the healing art to a famine-stricken and maimed Europe. That *role* was thus explained by Mr. Hoover, the American Food Commissioner in Europe. "Altogether the dominant problem in the rehabilitation of Europe," he said, "is one wholly of credits with which to buy overseas, and if such finance can be provided, Europe should be on a self supporting basis within a matter of years. Whether the United States will undertake the third stage in our intervention in Europe must be for Congress to decide. In my own personal view, the largest part of the credits required from the United States should be provided by private credits, and we should, except for certain limited purposes, stop the lending of money by our Government."

"The credits next year," he continued, "are required for business operations, and when Governments are engaged in business they always overspend, and the years to come must be years of economy, not extravagance. I feel that something like half a billion dollars' assistance from the American Government may be needed for us to join with the other Allies in the reorganisation of the currencies of the new States and to take care of some particularly acute and otherwise insoluble situations. On the other hand, much larger sums will be required from private credit for raw material and food, and in order to secure that these private credits to Governments, or specially to individuals, should be established our Government would probably need to consider some further measure of encouragement in this direction. In any event, some solution must be found, or we shall again be faced with starvation in some parts of Europe on a lesser scale next spring, when the forthcoming harvest has been exhausted."

* * *

Mr. Hoover concludes with a warning to the idle and revengeful Europe. "We may have some further political revolution in Europe," he says, "because the social pendulum has not reached a point of stability in some

spots, but in my view the great danger of the Red Terror and destruction by Bolshevism has been greatly mitigated, and will have actually passed in most countries on the signing of peace. If people return to work and orderly government is preserved, fighting stopped, and disarmament undertaken, and if there is no discrimination against the United States in favour of other countries—if these things are done the matter is one of nothing like such enormous figures as we have been handling during the war. If these things are not done, Europe will starve in spite of all we can do. The surplus of our productivity could not support a Europe of to-day's idleness, if every man worked fifteen hours daily."

* * *

In the Far East, Japan is in much the same position as the United States of America. Her war prosperity has been among the most phenomenal enjoyed by any nation. She is not, however, prepared, like the U. S. A., for instance, to play the philanthropist in any way. Since the Armistice, her trade has suffered. She complains that the Indian Government discriminates against her shipping. There are other circumstances besides which make her competition, to the fullest extent, with the rest of the world impossible. American attitude to the Shantung question by which she was not allowed the fullest enjoyment of that province and racial discrimination against her in respect of the League of Nations have made her natural proneness to suspiciousness intense. Japan is therefore sullen and sulky now. We cannot, however, much sympathise with her in her loss of trade for, it is natural that nations which have now been relieved from war operations should engage themselves profitably, and this they could not do if they indiscriminately took in Japanese goods.

* * *

The outlook abroad, then, is complicated by internal unrest and external suspicion. This is not an atmosphere which specially favours commerce and industries. The world must be cleared of revolutionary spirit which is the stepping stone to that detestable state of things which is described by the word Bolshevism. We can only hope that ere long a spirit of reasonableness and compromise will prevail, ushering in an era of quiet prosperity in the world.

There is nothing very striking to record at home. In Calcutta and Bombay, company promotion is going on at a rapid pace. Joint Stock Companies for the manufacture of sugar, of chemicals, of fertilisers and so forth, for the carrying on of insurance business and to forward other enterprises have been formed in large numbers in our sister presidencies. So great has been the activity in these directions that men of sound business instincts have sounded a note of warning against undesirable speculation. Reckless speed is as bad as intolerable inertia, but those who venture, we hope, have discussed all the aspects of their undertakings.

* * *

What troubles our own presidency, however, is not over-enterprise, but the complete absence of it. The report for 1918—19 of the Registrar of Joint Stock Companies, which was issued last month, is sufficient evidence of this. Mr Schmidt, our Registrar, tells this time also the same story that he has been telling us all these years. There was little real business activity in Madras, and what little there was, was confined to the formation of banking and loaning companies. Mr Schmidt reports that some of these associations take undesirable forms, such as certain kinds of club organisations which unduly favour the organiser at the expense of the members. These, he says, should be controlled, and if public credit should not be shaken in banking institutions generally, legislative precautions should be taken against such a calamity befalling on us.

* * *

Are we in for a 2s rupee? The Secretary of State has again raised the exchange from 1s 8d to 1s 10d. This is the fourth time that the exchange has been risen. This is, of course, in accordance with the policy enunciated by Sir William Meyer that the exchange rate would be raised *pro tanto* to the rise in silver, and silver prices have advanced to 58 and odd pence. But, what of the business community? Exporters find it extremely difficult to find cover for their bills. Cover could not be had even at a premium of 1 per cent. When will the Secretary of State realise that it is not so much the rise in exchange that matters as the *regime* of uncertainty that we live under, upsetting all our calculations and paralysing business?

There is one event in our presidency to which we should like to refer and that is the representation of Indian commerce and industries on our Legislative Council. The European community enjoys special representation on the Council through their Chamber of Commerce and the Madras Trades Association. This is perhaps as it should be, having regard to the present conditions. There is, however, no such representation for the Indian mercantile and industrial community. It would be untrue to say that their voice could not or would not be heard in the Council, for, apart from the fact that such a view would be grossly unjust to the Indian members of the Council generally, some members of the commercial community have got into the Council through other constituency.

There is, for instance, The Hon'ble Diwan Bahadur Theognova Chettiar, the Corporation

member, who happens to be the President of the Southern India Chamber of Commerce as well. He is certainly not the man to neglect our commercial interests, but how can we expect him to concentrate his attention on this matter when the Corporation it is that has returned him? So is the case with The Hon'ble Mr. Yakub Hassan, who is a Moslem representative but surely will not neglect the interests of the Skin and Hide Merchants Association. Then, there is the Hon. Mr. Muthiah Chettiar who is expected to represent indigenous banking interests besides the interests peculiar to his community. The gentlemen and some others are on the Council and let us hope that, in addition to fulfilling their duty to their special constituency, they will be able to see that Indian commercial and industrial interests suffer no neglect.

EDITORIALS.

The Outlook.

JUST as it has been said that man does not live by bread alone, so may it be said that the well-being of a country does not depend upon political progress only. Material progress is a factor of equal, if not of greater importance to the nation, and in this way it is more difficult of achievement than political progress. It can no doubt be stimulated by the wise, sympathetic and unselfish action of our rulers, but they can do no more than stimulate it at best. It can be attained only by the efforts of those who want to attain it. It is not a concession that we can obtain from others or a boon that can be conferred upon us. It involves the development of some of the finest qualities that any community can be proud of and calls for virtues some of which at any rate we do not happen to possess in abundance. We know that the people of India need fear no comparison in many respects with the peoples of western countries. Nay, in many aspects of national and domestic life, the ideals and practices of the Indian people are distinguished by a higher standard

of ethical excellence. But poverty is no seed-bed of morality, unless when it is very easily imposed and accompanied by high thinking and is the result of inherited culture and self-restraint.

Poverty in India has been no bar to high and noble pursuit in relation to the maintenance in the lowest orders of society of a remarkably high standard of moral obligations. But there is a limit to tolerance of poverty and the endurance that it imposes upon men and women. This limit is being fast reached in India. Again, the transition from status to contract in India has progressed to an extent that the effects of this transition have come to be felt in the moral world. The ties that held good and which were traceable to the ideals which a society based upon status cultivated and found it easy to cultivate, these ideals are not exerting that practical influence in life which they once did. The problem of poverty stands no longer where it stood when status meant more and contract less. The adoption of ways and

means of alleviating the consequences, material and moral, arising from poverty is therefore becoming a matter of paramount obligation every day upon the leaders of thought. And none of these ways and means can be divorced for a moment from a robust impetus to industrial and commercial expansion.

Moral and material progress do not stand in antithetical relationship so long as either of them does not become the exclusive, all-absorbing passion of a race. A sound reconciliation of the two is indispensable for human happiness and such a reconciliation has been the true Indian outlook upon life. In phases of our civilisation, the one or the other of them might have been unduly emphasised, but there was place for both always and the pursuit of wealth and philosophy, of fine arts and metaphysics, of things that mattered for comfort, joy and relaxation and things that mattered in appraising the value of these alongside the mental repose that was not subject to variation by success and discomfiture, —both these alike had recognition in India of old. The Mahābhārata which teems with descriptions of fabulous wealth, and bristles with accounts of artistic, architectural and mechanical devices does certainly evidence a civilisation in reference to which no one can fairly object to the appellation—"materialistic." But the Mahābhārata at the same time revels in ideals, metaphysical discourses and instances of human conduct in conformity with these ideals, that will entitle the same civilisation to be singled out as an unquestionable instance of the spiritualistic type.

The fact is India at no time despised material progress, although that material progress was sought after as but one stage in the full development of man which insisted upon his spiritual development as his ultimate goal. While, for the individual, spiritual destiny was the one ambition worthy of his aim as a member of society, his attention was nevertheless directed to the securing of those ends which can be denoted only by the word—materialistic. Hence those who would make use of the presence of either of these factors in support of any exclusive contention are presenting only a one-sided view of the Indian ideal. There is nothing therefore detrimental to our

distinguishing individuality as a nation if the message of material progress should be carried far and wide and if efforts should be made to direct the energies of the people of India in channels hitherto considered as somewhat derogatory to the serenely ideal of the East. A people who do not make up their minds to achieve a thing will never come by it for all that they may be capable of, just as in the case of an individual whose capacity is not yoked to a definite purpose, there is a waste and a vacuum consequent on want of will.

Our Industrial Organisation

Along with attempts to introduce new industries in our country, a stimulus has to be given to the better organisation of what may be designated exclusively indigenous industries on indigenous lines. India cannot afford to overlook them all and consign them to gradual but certain decay. We cannot supplant these by western machinery as though our dependence upon machinery has been got rid of and we were the manufacturers of machinery, instead of being merely buyers and importers. The population of India has to be seriously taken into account in displacing labour by the operation of mechanical power. Organised labour has not been an unmixed blessing in the West and we have to avoid the evils of too exclusive a preference for a uniformity based upon a "mechanical" efficiency—leaving the population at the mercy of "mechanical efficiency" alone.

We shall make our point plainer by an illustration if necessary. There is the handloom industry of India on which twenty millions of people depend for their livelihood. Even to-day, there are critics who hold that the handloom weaver must disappear in India as he has done in the advanced West and the poverty of this class of people therefore, instead of exciting sympathy and calling for means of alleviation, must be ignored in their own interests so that they may take to something else. We must declare ourselves against such a summary order of execution affecting hundreds of thousands of men and women, and an industry which in its methods of operation is much more compatible with health and cheerfulness than the life in a mill can ever hope to secure to the "hands."

But handloom industry in its present condition, however much of improvement it has undergone for some years now, is not exactly what it ought to be as an "industry." That it can become, but only with better organisation of capital and credit, with improved methods of supply of yarn, and with better ideals of discipline, punctuality and business methods than can be claimed for the vast majority of handloom weavers now.

We have taken only one example of indigenous industry which should not be killed instead of being cured. Indian pottery, metal works, lacquer-work, and similar indigenous industries call for organisation and development and not for gradual dissolution and disappearance under the stress of competition. Our advocacy of industrial expansion will not therefore mean merely the indiscriminate up-planting of indigenous industries by the foreign ones or the subordination of those higher principles of human obligation which are only too easily put out of sight in the fierce struggle for industrial success. In fact it is our mission to stimulate the industrial organisation of India on lines that will not mean the mere coming of an industrial civilisation with its callous and degrading consequences to the individual and the society alike. Nor do we propose to rest content with our present low level of efficiency, organisation and industrial ambition. What can be done towards the improvement of our cottage industries is a subject worthy of serious attention. We would draw our readers' attention to an article on the subject published elsewhere.

Wanted: Business Enterprise.

A strong and systematic current of opinion in favour of industrial expansion and commercial progress, has been too long lacking and unless attempts are made to turn usurers into capitalists and financiers and to enlarge the area of industrial enterprise the rate of material progress will be far from what the imperative needs of the country require. An intimate knowledge of what is going on in Western countries, and an adequate appreciation of the resources of our own must be brought home to each and every individual of any capacity, as a worker, organiser, or investor. Information must be

made readily available on all industrial and commercial topics and facilities must be found for increasing the contact between the businessmen of America and Europe and the businessmen of India. Samples and descriptive maps, charts, and catalogues must be procured and kept open to view, so that Indian business agents may form a view on the spot. But these things must have a reference to what is easily and immediately possible of undertaking in India.

Government may open museums and bureaus and they may serve a useful purpose no doubt, but no businessman feels warmed up to set up his business in consultation with officials—all the world over—and very particularly so in India. There are ways in which Government can be of immense help in advancing the industrial expansion of India but they mainly lie in other directions. The industrial and fiscal policy of the Government has to be fashioned so as to be in keeping with the industrial and commercial interests of the country and unless this is done everything else, will be in the nature of giving a sponge bath to a man who is hungering for food. Communications have to be opened up, in each case of a suitable type, for the rapid transport of raw materials and goods—not with a view predominantly of exports and imports as has been the case till now—but with a view to bring the produce of the field to the manufacturing centres in India itself and these manufacturing centres have to be shifted from the vicinity of big cities to the rural and agricultural areas.

Numerous plucky young men are required with brains and energy to raise our industrial efficiency to a level of competence which will do good to them and good to the country. The impetus for these young men must come from a central financial and business organisation which will study things and do things. In the same way many of our indigenous industries call for stimulus and co-ordination with the capitalist and the businessman. The "businessman" has yet to come into existence in India, in regard to many indigenous concerns. The merely "educated man" has been here for a long time now. He has prospered as a lawyer or as a Government servant or at any rate tried to prosper with no small measure of success. We dare say there are business men in the

ranks of lawyers and Government servants—and these must have come to the top. But these two walks cannot absorb all the available business talent in the country and consequently many hundreds who could have made immense successes otherwise have literally languished, for want of scope, to their own discomfort and to the detriment of the wider interests of the country. Material of this type must be better and more usefully utilised before we have the beginnings of an industrial awakening.

In providing business intelligence, in stimulating thought and in encouraging the growth of business enterprise, this journal will labour to the best of our capacity and light. The expansion of industry and trade, the greater productivity of capital, the better employment of business talent, and the amelioration of the conditions of the labouring classes will receive close attention from its conductor. We are aware of the difficulties of such an undertaking, but they are not insurmountable. We respectfully invite therefore the co-operation in every possible way of our countrymen of every class who are interested in adding to the material prosperity of our common motherland. As we have shown, it does not mean a departure from our immemorial, spiritual and moral ideal of life. On the other hand, these require and postulate the need for material well-being and material well-being has to be sought in the changed times in a more organised and better systematised way. This being undertaken now, we are but a vehicle that will be peculiarly devoted to this object, supplying information, stimulating thought, aiming at greater facilities of progress, and establishing contact whenever it is wanting. We hope with public co-operation, to be able appreciably to advance on twofold directions the cause of our country and the interests of our countrymen.

Trade with East Africa.

The Government of India have, we note, invited the opinion of the Chambers of Commerce in the country regarding the development of Indian trade with East Africa. The occasion for the invitation was a proposal by Major McKerrow to the Government of India to help him in floating a company to promote Indian trade with that country. The Indian Merchants Chamber and Bureau of Bombay

have just issued an excerpt from their proceedings expressing their opinion on the matter.

"The trade between India and East Africa," they state, "has been going on for a long time and has considerably developed during the war period. This trade consists chiefly of cheap food-stuffs and clothing in which Indians carry on a large retail trade with natives of Africa. Indian shops are scattered far and wide over the country and it is estimated that more than 90 per cent of the retail trade with natives is in the hands of Indians." "This can be developed to a very large extent," they continue, "if the disabilities to which it is put at present are removed. The Committee are given to understand that for some time past the colour prejudice which is responsible for a great deal of mischief in South Africa has begun to make itself felt even in East Africa. It is alleged for instance that Indian merchants are not allowed to possess any piece of land on the high lands, but have to remain satisfied with low lands, which debars them permanent settlement in the country. The segregation campaign is in full swing and it is sought to enforce the removal of Indian residential localities and bazaar from their present long-established sites. Not only this but an attempt is being made to remove Indian gingeries from leading industrial places like Kampalla and Nairobi in order to remove Indian competition from the way of European traders. If these allegations are true, the Committee fear that Indian trade in East Africa will be subjected to the same sort of harassments with which the Committee have been painfully familiar in South Africa."

Here is the conclusion of the Chamber. "The instances to which the Committee refer are, it is said, but an index to the general feeling of opposition on the part of European settlers to any encouragement being given to Indian trade and industries. Under these circumstances, it would not be surprising if Indian merchants are led to take but a passing interest in the development of trade with East Africa and are afraid to settle down or sink capital in the country which otherwise provides large potentialities for the settlement of several industries and for the expansion of trade of which some idea can be formed from the fact that only a small percentage of African natives

are used to cereal food or clothes. The Committee are of opinion, therefore, that with the removal of all the grievances and inequalities, there will be a natural development in trade between India and East Africa without any interference from the Government on the lines suggested by Major McKerrow in his scheme to form a trading company."

Major McKerrow answers the above note by stating that before a Trade Commissioner, for whose appointment the Committee agrees, is ap-

pointed, trade might slip out of our hands and that, at any rate, it is only a large company with Government help in the matter of transport, etc., that can develop business. The Major's answer seems to us a little unconvincing. At any rate, we see little need for a Government-aided Company, since we are told by the Indian Merchants' Chamber that Indian firms will be ready to undertake the business, provided the disabilities under which Indians are placed there are removed.

INDUSTRIAL EXPANSION IN INDIA.

By Mr. C. Gopal Menon, A. I. B. S. S. F. C. I.

THE first number of *COMMERCE AND INDUSTRIES*, which was ushered into being last month, has some very interesting articles on the industrial situation in India. It is the purpose of the writer of this article to show what expansion in the direction of industrial development India has actually made during the past five years.

THE NEW ANGLES OF VISION

In the address to the Convocation of the Madras University delivered by Sir Thomas Holland, he pointed out that India has to be prepared in the near future for two great changes—(1) the acceptance by Indians of a greater share in the administration of the country, and (2) an equally important forward move in industrial development. Lord Chelmsford, in opening the Madras Exhibition in December, 1917, said: "We, many of us, during these last three terrible years, revised our opinion on most subjects, and on this matter of industrial enterprise, I doubt, if there are any now who would not say that it is the bounden duty of the State to foster industrial enterprise to the utmost of its ability. Personally, I put the matter of industrial development in the forefront of my policy."

The utterances of these eminent men are significant. The one—who has led the deliberations of the Indian Industrial Commission and later on, as the head of the Munitions Board, has accumulated for us a wealth of practical experience by supplying war materials in India on a scale

hitherto unknown—has clearly demonstrated the future possibilities of India in various directions for industrial expansion. The other, as the head of the administration of this vast country, has emphatically given out his view of the future policy of his administration on industrial development. These are, indeed, wise words, and India's industrial expansion during the last five years has really been one of the surprises of the war.

THE EFFECTS OF THE WAR

Since the outbreak of the War, the importation of manufactured goods from the United Kingdom was greatly reduced and those from Germany, Austria-Hungary, Belgium and France, stopped altogether. Trade with the United States, particularly in steel and manufactured metals, increased twofold. India, during the war period, obliged to fall back on her own resources, supplied materials, not only for the prosecution of the war, but also to meet her home demand. The number of Joint Stock Companies started within the last five years shows her ability in industrial and economic expansion. During 1914-15, 112 companies with an aggregate capital of Rs. 13,132,214 were started. The number of new companies in 1915-16 was 137, and in 1916-17, 184, and in 1917-18, 278. The authorised capital of these companies was Rs. 297,597,847. During the four years of war, 705 new companies have been registered. Some of the old organisations, particularly the cotton and weaving factories,

have made extensions to their original capital. At present, in Bombay, company promotion on a wholesale scale is talked about. A large Insurance Company has already been started and four or five banks with their head offices in Bombay are being floated. Large sums of money are said to be awaiting investment. India's trade balance, which stood at 27 crores a decade ago, has steadily gone up and the balance of trade last year was 8½ crores in her favour. India's trade prospered for the last few years, and it is hoped, that the prosperity will continue hereafter.

OUR TEXTILE AND LEATHER INDUSTRIES

The number of jute mills increased from 60 in 1913-14 to 74 in 1917-18. All these mills, which are situated in Calcutta or within a radius of 30 miles from that city, turn out enormous quantities of gunny bags. Last year, Calcutta exported 805,000,000 gunny bags.

The export of hides and skins amounted to 1,632,000 cwt. in 1913-14 valued at Rs. 1,14,063,816 and leather 298,000 cwt. valued at Rs. 11,351,145. Madras exports largely hides and skins in a tanned condition which is known as "East Indian Kips" in foreign markets. The export of raw hides from Madras is small, but Bombay, Karachi and Calcutta send a considerable quantity of raw skins. It is, however, regrettable to notice that, notwithstanding the excellent tanning materials that exist in the country, we are not able to convert the greater portion of this raw produce into manufactured goods by the different processes of tanning, curing, dyeing, dressing and shoe or boot-making.

Another industry which shows considerable increase during the fiscal year is cotton weaving. This industry has increased by more than 50 per cent. above the pre-war average, while imports by sea fell by 1,076,000,000 yards or about 40 per cent. The number of looms as compared to the pre-war average rose from 88,100 to 110,800 or 26 per cent. During 1917-1918, the Indian mills turned out 660,576,000 pounds of yarn and 381,404,000 pounds of woollen goods. Notwithstanding the increased production from the Indian mills, there is a great demand for cotton goods from abroad which has not been met.

IRON AND STEEL

There is ample evidence to show that deposits of iron existed in India from time immemorial and our ancients were acquainted with its uses and properties to a very great extent, and could produce it very nearly equal in quality to the iron of the present day. There is, no doubt, unlimited amounts of iron and steel available in India, this is evident from the fact of the growing impetus given to this industry during the war period. The Tata Iron and Steel Company, at Sakchi, near Calcutta, whose turning capacity for steel is 17,000 tons a month, and the rolling mill capacity is 12,000 tons of rails and smaller sections a year, have done very well by supplying the demands of home and foreign markets. New additions are under contemplation for the supply to Government of 10,000 tons of steel plates per annum, structural materials, such as angles and channels are also made. Another concern of a similar type, known as the Indian Iron and Steel Company, Ltd., which occupies 6½ square miles has recently come into existence.

Another enterprise of Tata's is the Hydro-Electric Power Company, with a plant capacity of 60,000 horse power, which supplies power, to 34 mills in Bombay, transmitting power at 1,00,000 volts over a distance of 13 miles.

These are all evidences of industrial expansion in India, and with a supply of plant and machinery at a reasonable price, many others will be started in the near future. The present sterling exchange will materially help for the import of plant and machinery. There is ample room for developing tanning industries, sugar, soap, glass, pottery, brass and copperwares—brass and copperwares of Benares and Aligarh having attained some degree of attention.

CREDIT INSTITUTIONS

In the article in the last number on industrial situation in South India, the writer points out that what is really wanted is capable, bold and ambitious capitalists in India, for her industrial and commercial advancement. The present is the era of industrial and commercial development in India. What is wanted is a net-work of banks, banking is the mainstay of industrial development and the more the number of banks in a country the more will be the country's commercial and industrial prosperity. India has been

greatly deficient in banking capital, and the establishment of banks, from the facilities they afford for raising money, will induce men of capital to embark on commercial and industrial undertaking. British capital has been employed for industrial purposes to the mutual benefit of both countries, and Indian capitalists would do well for the future to invest their spare funds for the promotion of banking institutions. Bigshot points out that the rapid increase of wealth in England is partly due to the democratic nature of its capital. What is wanted is to make use of the money of people who do not immediately require it for the use of those who are really in need of it. This is what is the original or the primitive idea of banking. Banks are also wanted for industrial and agricultural development. In Japan, there are about 50 agricultural and industrial banks. The Industrial Bank of Japan has a capital of 5 crores, deposits to the extent of 15 crores with a profit of 10 lakhs, and dividing 7 per cent per annum for dividend. In France, Credit Lyonnais, which has hundreds of branches all over the country, makes advances to the peasant and the small trader, enabling him to obtain money on moderate terms.

INDUSTRIAL BANKS

During the last five years, credit has played a larger part than even guns or bombs or shells.

What we want is credit facilities not only to improve home industries, but in extending foreign activities of the country. In foreign countries, banks undertake all sorts of duties in addition to receiving money for safe custody. In the industrial world, many facilities are given by the banks to small manufacturers and merchants more particularly in fostering foreign trade. The Titus Industrial Bank is started with this object. We wish to see a few more banks of similar type introduced in order to render help to home industries. One of the results of Lord Faringdon's Committee which sat in England in 1917 was the establishment of a huge institution known as "The British Trade Corporation" to afford facility and establish large credit institutions for developing British trade abroad. Its object is not to interfere with the present Joint Stock Companies, but to fulfil functions for industry which the present banking institutions are not capable of doing. It is similar institutions that are required for industrial expansion in India today, and it is to be hoped, that the day will not be far off for India to stand on the same pre-eminence in trade and industry as other countries in the world when the problem of finance required for such undertakings has been solved.

THE RISE IN EXCHANGE.

By Mr. K. P. Viswanathan, M. A.

THE Secretary of State has in the course of the last two years and more raised the exchange four times. The fourth rise was announced last week from 1s 8d to 1s 10d. The reason for this is plain. Government can supply rupees without loss at 1s, 8d, only if silver prices do not exceed 53½d. The cost price of a rupee to Government when silver stands at about 56d an ounce, as it does at present, will be taking transit charges, insurance, interest, etc., at the highest rate which is probably the correct figure now, somewhere about 21 63d. The Government feels it will not be justified in giving the coins at 1s 8d when their actual cost to them is about 1s 10d each at the expense of the general taxpayer. What they are now trying to do seems

to be to grope for a new and stable ratio between gold and silver on arriving at which they could finally fix the exchange rate of the rupee at a figure which may be expected to be stable without mulcting the Government in a heavy loss on coinage. "The stability of exchange," wrote Mr. Dadasaheb M. Dalal, who is believed to be one of the confidants of the Finance Department, "can be ultimately established by intermediate temporary dislocations or through constant oscillations for a period during which the revised value of silver can be properly ascertained." When Mr. Dalal wrote this, he seems, judging by the events, to have echoed the views of the Government. The Government of India is simply pursuing a policy based on the first of the two alternatives that Mr. Dalal

points out We are not immediately concerned with the question whether the Government are pursuing the wisest policy, within the very narrow field for freedom of action which alone is permitted to them by the "City" in London through the Secretary of State, they appear to be pursuing the most prudent course possible, and there we have to leave that question for the present The point that we are to discuss now is rather the effects respectively of a low and a high rate of exchange in the country, and to this we shall now turn

THE CASE FOR A LOW RATE

The case for a low rate of exchange is easily summarised Its advocates base their arguments principally on two circumstances One of these is political The Indian Government's solvency, they point out, depends on India's ability to maintain her exports to such an amount that the annual balance of her trade, that is, roughly speaking, the excess of her exports over her imports, will be equal to about £25 million sterling—which is roughly slightly above the maximum amount of what is called her "Home Charges" This India can hardly do, they say, unless the exchange is at a fairly low level If the exchange were at a high level, they state, the European demand for our produce will fall owing to the increased prices, for, the European demand for our produce is based on the cheapness of our produce compared with that of the produce of other parts of the world The point may be illustrated by a hypothetical case Suppose, an English grain dealer wanted to stock wheat He would make enquiries in the wheat-producing countries and suppose the result of his enquiries is that he found Russian wheat to cost him 5s 3d per quarter in London, while Indian wheat, where exchange stood at 1s 4d, cost him only 5s a quarter in Mark Lane In these circumstances, it is clear he will resort to Indian wheat in preference to Russian wheat, assuming the quality of the two to be the same, because he gets it at a price which is 3d a quarter less than Russian wheat Suppose, again, that after some time, Indian exchange rises to 1s 10d In this case, on every quarter of wheat, he will be called upon to pay, other things remaining the same, 6d more per quarter of Indian wheat In this case, it is clear, the English merchant will lose 3d per quarter, if he were to continue to purchase Indian wheat Merchants do not trade

for loss, and so Indian wheat will not be purchased, our exports may fall below our imports and make the Government impossible to remit the Home Charges, leading them on to bankruptcy This, of course, will not take place, owing to counteracting causes coming in operation simultaneously The argument is purposely pushed to absurd lengths to point out clearly the nature of the argument and not to assert that such a thing will ever take place So far, then, as to the case for low exchange from the side of Indian finance.

THE RYOT'S INTERESTS

It is not, however, on this ground that many argue for a low exchange They state they put the case from the ryot's point of view Their position also is best illustrated by a hypothetical example Suppose, a ryot produces and exports 500 bags of wheat per year and is paid £100 for it At the rate of 1s 4d a rupee, he will get Rs 1,500 If we suppose that he pays Rs 500 to Government as tax and incurs Rs 500 as cost of cultivation, including rent to the landlord, then, Rs 500 will remain to him for his own expenses Now, suppose that the rate of exchange is raised to 2s a rupee In this case, the ryot will get for his 500 bags the same £100, assuming that the prices are regulated in Mark Lane and not in Bombay or Karachi At the rate of 2s a rupee, however, he will get only Rs 1,000 Out of this, he will have to pay the same Rs 500 to Government, and his cultivation expenses will stand at the same amount of Rs 500 The result will be that he will be left with nothing under a 2s rupee as against a net profit of Rs 500 under a 1s 4d rupee This is, of course, an extreme, not to say an altogether impossible case, but it, however, brings home, as perhaps nothing else can, the tendency of a rise in exchange for the time being The advocates of a low rate of exchange assert that the ryot will be ruined under a high rate of exchange, and that since about 90 per cent of the people are pursuing agricultural operations, practically the whole country will cruelly suffer under a high rate of exchange

Besides this direct interest to the ryots, it may be pointed out that they have an indirect interest also in seeing that exchange is maintained at a low rate The development of

India, it may be said—at any rate, it used to be stated—depends on foreign capital. Foreign capital it was that made the development of railways possible and the development of railways resulted in increased prices to the ryots. The development of industries also, it may be argued, which increases the demand for agricultural produce and thereby benefits agriculturists, depends on foreign capital. Such foreign capital, the low exchange advocates may say, is attracted by a low exchange and repelled by a high one. How far these things will have a practical bearing on the question in the circumstances of the day is, however, a quite different affair and will depend on the strength of numerous counter-acting causes. For the present, we shall be satisfied with noting these arguments.

THE CASE FOR A HIGH EXCHANGE

The advocates of a high exchange assert equally with those of the low that financial remedy is necessary in the interests of Governmental finances as in those of the country in general. Under a 15-17 rupee, they point out, the Government will have to send 30 crores of rupees in satisfaction of their Home Charges of £20 million sterling. Under a 2s rupee, however, they need send only 20 crores of rupees. A saving of 10 crores, if it could be made without serious monetary disturbance in the country, as they say it could be, is well worth effecting. The Afghan War, it is stated, is costing Government eight crores a month and unless exchange is raised, they say it would be extremely difficult to find the necessary money. Moreover, with silver at price above 6d, it would be imprudent for the Government to provide rupees at anything less than 2s each. Further a high exchange would have salutary influence on the rupee securities of the Government. It will, it is said, strengthen their credit, and it will make it easier for them to convert their sterling securities into rupee securities. The reduction in her sterling debt will reduce her Home Charges and thus indirectly stabilise her finances. From the point of view of Indian finance, these are the advantages claimed for a 2s rupee.

This is only one ground on which a high exchange is welcomed by some students of the question. Their second reason for their suggestion is that a 2s rupee will solve our currency troubles. A 2s rupee, they say, will limit the

demand for precious metals by reducing exports and increasing imports, for, a high rate of exchange will stimulate imports, since will importers get in appreciated rupee. Moreover, if the exchange value of the rupee be raised to 2s, then the rupee will be kept a token as it was in pre-war days and that therefore it will not be melted down for silver bullion till the price of silver rises very much above 60d an ounce—a contingency not much apprehended. The demand for currency would, under it, be reduced and it will not be difficult to supply the reduced demand as the coming of silver will not in that case lead to any loss.

OTHER ADVANTAGES OF A HIGH EXCHANGE.

There are some other advantages claimed for a 2s rupee. For one thing, India, it may be contended, is in need of a huge railway and industrial development programme and the rise in exchange rate will stimulate the import of essential machinery. For another and this from the point of view of consumer—the food grains and other necessities of life such as cotton for cloth will be available at cheaper prices than they would be with a low exchange rupee. It is on this point that Professor Jevons of Alldribad lays the greatest emphasis, his opinion being that, if exports be stimulated with a low exchange rupee, people will suffer from famine on an immense scale. It is argued that agriculturists will not suffer so long as they get a reasonable margin of profit, and it is asserted, rightly as we think, that they will get this margin even under an increased rate of exchange. There will, they say further, be no economic disturbance in the country, either directly on account of the rise or indirectly through disturbing the relation between debtors and creditors, for, gold prices will rise as they did in the past four or more years, at least 50 per cent above their present level. The rise will therefore be only just to the rupee security holder, the civil servants and others who are in equity entitled to the original gold value for their securities, goods and services.

GENERAL CONCLUSIONS

The position arising out of the conflicting interests of those of exporters and of importers is thus one of great complexity. The fact is there is no element of truth on either side, though the effects of that truth are grossly exaggerated, especially, perhaps, on the side of the exporters. Thus, the exporters who clamour for a low exchange do not take into effect certain

peculiar circumstances of the situation which more or less neutralise the depressing effects of a high exchange. In the first place, the demand for some of the Indian commodities is highly inelastic. Bengal, for instance, has a practical monopoly in jute, and cotton producers have the demand for cotton unimpaired in spite of the rising exchange and in spite of lack of tonnage. The experience of the Straits Settlements, narrated by Kemmerer, confirms the theorist that where demand is keen the loss due to rise in exchange is shifted on to the consumer through the importer. Secondly, prices abroad have risen far higher than those in India, and far higher than the rise in exchange, so that the demand for Indian produce cannot be diminished by the competition of foreign European or American producers. Finally, it must not be forgotten that even if, through the appreciation of the rupee, Indian prices fall, the producer will not long be put to the inconveniences arising from it, because such a fall in prices would stimulate foreign demand. It is suggested that the rise in exchange acts as an indirect taxation on producers, but it must not be forgotten that it can do so only in case prices have fallen. Prices, however, far from falling, have really risen. The same is the case with the disturbance of the relation between debtor and creditor by a rise in exchange. The effect of the increase is neutralised by the rise in prices.

On the other hand, it is open to question whether the rise should be much as is set above

the pre-war basis. Prices certainly have risen, but, it is neither necessary nor just to raise exchange so much as wholly to neutralise the rise in prices, depriving producers of the advantages of the high prices, seeing, especially, that their cost of living has risen owing to the rise in prices of other commodities than their produce. Moreover, the argument that it will stimulate imports of essential machinery need not necessarily be confined to the imports of machinery. A high exchange will stimulate the imports of costly and useless luxury as much as it will stimulate the imports of essential machinery. This is one of the greatest dangers of this period, the danger, that is, of our hard-earned trade balance being liquidated by the dumping of attractive trifles among an ignorant peasantry and not very enlightened landed gentry. The fact is the raising of the exchange must not be utilised to a purpose essentially extraneous to its legitimate function. Imports must be facilitated or restricted by other means suitable for such a purpose, though in using those means account may be taken of the effects of exchange. The same holds good of the argument based on the interest of the consumers. Exchange should not be tampered with for this or that purpose, but should be regulated solely with reference to its actual function, although the effects of rise or fall should be taken note of so as to avoid gross injustice to any interests. This, I think, is what is aimed at by the Government so far as their present policy is concerned.

UNDER-EMPLOYMENT IN INDIA AND ITS REMEDY.

By Mr G. Narasimham, F B E A, F A A

THE scope for domestic industries in India is unlimited, so is the need for them. On the one hand, there are certain kinds of industries in which the use of machinery will be very limited indeed. Art industries such as wood carving, lacquered goods, textile fabrics like carpets, matted articles and so forth must, so long as their peculiar property is in demand, be turned out by hand. So are industries in which close personal attention and the handling of individual things are necessary. There are certain special qualities which make small

industrials succeed, and fortunately, the Indian is not lacking in them. Dexterity and nimbleness of fingers, perseverance, patience and true-ness of eye which make for success in these matters are as much possessed by Indians as by the Japanese and others, and where the Japanese have succeeded, so far as these industries are concerned, there is no reason why Indians should fail.

UNEMPLOYMENT IN INDIA

The need for encouraging these industries is as urgent as the scope for it is unlimited.

Indian poverty is explained to a great extent by the chronic under-employment from which the Indian is at present suffering. The competition of Western machine-made goods drove him altogether to agriculture. But agriculture cannot employ, nor could it support, the whole lot of them. The result has been that the Indian peasant works for about four months a year—the period of the year comprising the agricultural season—and practically passes the rest of his time in idle poverty. In his active period, he gets a full meal a day and some *congee* in the morning and in the noon or at night, but the rest of the year, he eats what he gets—and what he gets is generally insufficient to give him a hearty meal. This is because he has to lead a life of enforced idleness. The introduction of domestic industries is calculated to give him suitable work and hence the need for encouraging them.

LIMITATION OF FACTORY INDUSTRIES

There is one more reason why domestic industries should be encouraged in India. This has been well explained by that great co-operator, Mr. Henry W. Wolff in a letter to *Capital of Calcutta*. "Domestic industries, so it is admitted," he says, "are a necessity to the country. The very nature of things, a huge population scattered over an enormously extended ground, actually calls for it. There are well meaning men out for the development by presence of large factory industries, such as might, as they think, place India industrially on a par with Lancashire and Yorkshire. There is room for such industries, of course, and one would wish to see them growing up and flourishing. However, they will have to be selected and supervised with care." "What undue effort in this direction will bring about," he continues, "we have ample opportunities of seeing in Japan, where, on the showing of Professor Kumazo Kuwada, a member of the House of Peers, writing in the *Japan Year Book*, 80 per cent of the workers actually employed in such industries fall out of the ranks, where 8 per thousand are carried off by consumption while in employment, 30 per cent after retirement from such, and where, as Mr. Robert Porter reports in *The Full Recognition of Japan*, night workers and day workers, working at a miserable wage, have to share the same bed, which accordingly is never even

aired, the new occupier showing himself in as fast as the old one goes out." We can only exclaim with Mr. Wolff, 'God forbid that India should share experiences of this sort with her eastern neighbour.' There is illness and distress enough in good sooth in India as it is."

THE EXAMPLE OF JAPAN

The above is but a negative lesson that we have to derive from Japan. The experience of Japan offers us a positive lesson as well. Here is that lesson as expressed by Mr. Wolff. He writes "Your neighbours, the Japanese, who never sleep but with one eye, keeping the other eye carefully open as the 'weather' one, have found this out long ago and, with the characteristic quickness and resource of their race, acted upon the discovery. I go into one of our great giant stores here in London—my one that you may please—where there is a tremendous turnover day after day. Everywhere I find a special 'Japanese Department,' full of goods of the most varied description, a large proportion of them made by hand by the skilled artificers of their country—goods which sell readily and are appreciated. There are lacquered goods, textile fabrics, matted articles, and I don't know what else besides. And on enquiry I hear that there is a great deal more that the busy, adaptable and docile sons of the Rising Sun provide with their cheap labour, their lissom fingers and their remarkable all-round aptitude for both the British and the American market. American firms have supplied them with patterns on which to model their products, and the Japanese do what is wanted of them."

"Now these Japanese," Mr. Wolff continues, "are exact counterparts to our Indian small industrials. They have come newly—comparatively newly—into the market, with old-fashioned methods, old fashioned tools and very moderate wants for themselves, all handed down by tradition. But they have shown themselves quick to learn, adaptable to a rare degree, clothed with an elastic skin, which takes in new wrinkles easily. Their Government has, like themselves, kept its eye steadily to the main chance, providing technical teaching for them and planning the way for easy business. The result is a foreign trade—in goods which Indians might manufacture as

well as any Japanese—which brings ample grist to the mill and the full compass of which exceeds all that people are likely to estimate it at, because so much of it is unavowed. 'I have English textile goods here,' so said to me the Manager of one of our great stores, 'which were made by Japanese in Japan.'

REQUIREMENTS OF THE SITUATION.

The possibilities of success and the need for it being thus plain, it remains to be seen what should be done to encourage domestic industries. These things are mainly two. In the first place, we should find a market for what we produce. Here, there is the difficulty that what we have to offer is not required in the market. Mr Wolff has interested a friend of his connected with a great store in England which sells Japanese wares, and this is what he says as regard the prospects of Indian production. "The Japanese specialise in household articles for use to a far greater extent than in India. It is a question of the suitability of the commodities concerned for the English market." "We have tried Indian ivory carvings and silver ware and that class of goods," so he went on, "only to find that there was no demand for them." "That knick-knackery evidently," Mr Wolff says, "is of little use for our purpose. But we know that in the production of lacquered goods, textile fabrics of various descriptions—above all things, carpets as well as in carving and furniture-making, Indians can well compete with Japanese or anyone else."

It is evident from the above opinion that our articles are not wanted. The mountain, it is clear, will not go to Muhammad. Muhammad, then, must go to the mountain. And this is our second requirement. We must make such articles as will suit the market.

What do we want in order to gain it? Let Mr Wolff answer. "Instruction, teaching, guidance first of all. Weavers, carvers, leather dressers and so on want to be led to lay aside those antiquated tools, set up their antiquated practices, learn what is wanted in Europe—European dealers are likely to assist them in that as much as ever is needed, because it is to their own interest that this new source of supply should be cultivated—and learn also to turn out what is wanted. Authorities directly interested in the improvement of such industry, such as Registrars of Co-operative Societies,

can do not a little towards this—and are sure to be ready to do it. The Government can do more. *Fas est ab hoste doceri*. Our enemies, the Germans, have done a great deal in this way, and with undeniable success."

The fact is that the securing of a market for the goods we produce and the adapting of our wares to the needs of the market are phases of one and the same problem—the problem, that is, of securing a market for our copy, skill, and artistic eye.

PART OF CO-OPERATIVE MOVEMENT

The Indian artisan cannot feed the market regularly undisturbed, with articles of uniformly good quality unless he is financed and his work supervised and regulated by some independent and sympathetic agency. That agency should surely be provided, as it will most fittingly be provided, by the co-operative movement. As Mr Wolff says: "Once the market is secured, co-operation may be trusted to do the rest—provide the necessary cash, introduce the requisite organisation, organise the purchase of raw materials and the sale of finished goods. What veritable wonders it may produce in this way, even under distinctly unfavourable circumstances, we have recently learned in Ireland, where co-operation has turned absolute wildernesses on soil consisting of mere rock and in the almost entire absence of modern means of communication into flourishing oases of plenty. So it is in Templemore, where hosiery workers now receive a recompense for their labour, such as, before co-operation came into the field, they could not have thought of as much as dreaming of, and in the Aran Isles, where fishermen under the sway of co-operation realise double and more of what they used to do, under the domination of middlemen dealers, for their fish. The world is getting on fast on this road. Germany and Switzerland have taught us something. The United States and Canada, taking up the work of organisation of markets with truly "new world" verve, are teaching us more. But the first thing to do is to secure the market."

NEED FOR A TRIAL

The immediate requirement of the situation, then, is that our goods should be tried in the British market and Mr Wolff's friend is willing to help us in this matter. We associate ourselves

wholeheartedly with this appeal of Mr. Wolf. "Now," he writes, "cannot some good people in India—of whom we know that there are a great number—and among Anglo-Indians at home take up this matter, accept my manager friend's offer and undertake to stand the racket of one or two experimental deliveries, charging themselves with the risk of failure to sell the goods? Of course, there would have to be a careful selection first of the goods to be offered, and care will also have to be taken to see those goods manufactured so that they will stand a test. The Dimes have done this with their butter, then eggs and their bacon, and after a little groping—at their own risk—they have conferred a boon of immense value upon their country as well as upon themselves. In India we shall not have far to look for guidance in such work. There are the Japanese, who have acted as pioneers exploring the ground for us." We hope that enterprising businessmen and influential co-operators will come forward and immediately try this experiment.

THE FUTURE

Should the experiment succeed, there should not be any serious difficulty in arranging for sale on a scale consistent with the demand for the wares in the market. Mr. Wolf appears to have little faith in Home Industries Associations. He writes: "Of what will have to

follow after—methodical organisation and making sure of a trustworthy supply of trustworthy goods—it is too early to speak now. That will have to be thought of in due course. The Rubicon to be crossed is the sale—sale abroad, where quality comes far more into account than it does at home, but where also more money is to be picked up. One would wish such stores as that organised by Lady Carmichael in Calcutta all possible success. My own experience of what has been done on similar lines in London, Paris, Lyons, Rome, Milan and other places, is not over-encouraging. But in any case a recognised place in our great all-containing bazaar must, if it can be obtained, prove of very much greater value." His lack of faith in organisations like these is well justified, for they have their origin in a few enthusiasts, often in a single individual, then vitality and longevity vary with the intensity and the continuance of their enthusiasm. Above all, it is seldom, if ever, that you get a continuous stream of disinterested, capable and philanthropic enthusiasts. The stability of such enterprises, then, is ensured, not by seeking after enthusiastic and capable professionals, but on making those directly interested in them capable, discerning and businesslike and for this, we must look to the progress of co-operation among them.

14 POINTS ON HOLIDAYS.

In deference to the fashion of the time, Mr. H. A. L. Fisher, President of the Board of Education, placed the following fourteen points on holiday before the Educational Associations Conference—

- 1 Plan your holidays carefully but be ready to abandon your plans on the slightest provocation
- 2 Never go north when you can go south
- 3 A change of work is in itself a holiday
- 4 Never drive when you can walk, and never walk when you can ride
- 5 Take short cuts if you will but remember that there is seldom time for them
- 6 A good holiday is like eternity: there is no reckoning of time
- 7 One of the best fruits of a holiday is new friendship
- 8 Stay where you are happy
- 9 Soak yourself in the atmosphere of a new place before you study the details
- 10 The best holiday is that which contains the largest amount of new experience

11 Holidays come up for judgment before the next term's work

12 In the choice of holiday books act on the principle that one of the main uses of leisure is to feed the imagination

13 The principal experts in the art of taking holidays are painters, naturalists, travellers and historians: the worst person to consult is a golfer

14 On occasions a very good holiday can be taken at home—if you change the hour of breakfast

Wide, vivacious, desultory reading of all kinds of books continued Mr. Fisher was the finest way of quickening the imagination, and was the best way of keeping alive. Quantity was almost as valuable as quality

To keep books behind glass or on ill-lighted bookshelves was the summit of inhumanity, he had seen some school libraries that contained a ton of tedium for every ounce of entertainment

THE PROPOSED SUGAR COMMISSION.

By Mr. John Kenny,

Formerly, Director of Agriculture, Junagad

THE fact that Mr. James McKenna is to be President of the proposed Sugar Commission is a guarantee that the inquiry will be thorough. During the last few years a great many essays have appeared in the press, the upshot of which seems to be that we can do better if we but have great central refining factories. Yet this and our small average yield per acre are not the controlling factors in the import of sugar into the largest cane-growing country in the world.

THE YIELD IN INDIA

India can produce as much sugar per acre as any other country. In Telangana (Hyderabad, Deccan), 84 tons of cane have been grown on an acre of land watered by a channel from a tank and the amount of gur manufactured by the ordinary raiyats' method was 16,000 lb. Java can scarcely beat that. A ratoon crop on the same acre returned 10,000 lbs of gur. Yet the expenditure was trifling. There are various parts of India in which one of the costliest manures, saltpetre containing 10 per cent. nitrogen, can be obtained for less than Rs. 200 per ton. Less than 18 cent per acre will supply all the nitrogen and potash required for a very heavy crop and 2 cent of Trichinopoly ground phosphate, which should not be dearer than Rs. 6 or Rs. 8, will be sufficient for the requisite supply of phosphoric acid. A ratoon crop would require half that amount of manure per acre and an acre could thus give the farmer 26,000 lbs of gur within two years.

LACK OF CAPITAL

Unfortunately, the cane ripens almost at the same time all over the country and the village sowcar gives the lowest price he possibly can for the produce. The initial expenditure is beyond the means of the majority of Indian peasants few of whom can afford to wait a year for a return on their outlay. This is

overcome to a certain extent by partnership co-operation but even these are so petty that in many places it is rare to see patches under cane of more than an acre in extent.

But, with a little capital and a fairly steady market price, there is no doubt miles of continuous canefields would soon be the rule.

Would that help the raiyat? It is doubtful. It is more than probable the increase of gur would but serve to lower its price and scarcely be the way to greater imports of refined sugar.

What is the explanation of the seeming paradox that the greatest sugar-producing country of the world has to purchase from outside something like a million tons annually?

THE CRUX OF THE PROBLEM

The key of the puzzle lies in our abkari system. Till that is changed, our canefields may produce three as much per acre as Java and central factories may cover the land but little progress will be made. The refineries, if ever they are started, will soon but serve as monuments of failure. It is the successful use of by-products that has saved so many industrial concerns and only when molasses, the principal by-product in the manufacture of refined sugar, can be economically disposed of, will there be a chance of arresting the import of sugar. This is the question to be solved before any attempt is made to start large sugar-refining factories to compete with beet. With its solution, the spread of the growth of sugar cane and the increase of returns per acre will be automatic. Without it, all the talk of supplying, from within, the sugar requirements of India is, to use an Americanism, merely hot gas.

INSURANCE IN MODERN SOCIETY.

By Mr. S. Kabboor, B A, F F A A, F C I

Considerable progress has been made in recent years in classifying the dependent and defective classes of the community. This is a hopeful thing. By classifying them by causes, we may reasonably expect to discover means of prevention. Suppose that such an attempt at classification had been made one hundred years ago. Let us take, first, the dependents, by which term is meant those persons who become charges upon public or private charity, not because of personal defects which make them less efficient than others of their kind, but because of infancy or age or other natural disabilities which come to all men, but which have overtaken them without provision for support.

The distinction between dependents and defectives is not as wide as the Straits of Dover. The defectives are dependents, at least, in such enquiries we consider only those who are dependents. And all the dependents whom we shall find in ordinary times bearing loss of employment as a cause, are likely to be defectives. But we do not classify a child or an old man among the defectives, we do so classify a man who is disabled before his time, whether by accident or disease.

Armed, then with a somewhat meretricious distinction, let us undertake just now to analyze the dependent classes of a century ago. It may be premised that every individual is dependent in childhood, if not upon the State, then upon his parents or upon provision left for his support by his parents, and that this period of dependency extends, gradually lessening in intensity, through the child's minority.

THE DEPENDENT CLASSES

The first class of dependents, then, which we find among the persons who have become charges upon private or public charity, is that of orphans who have no provision for their support from the savings of their dead parents. A more pitiable class of dependents will hardly be discovered. Their condition is clearly in no sense a thing which they could have avoided, it is not their fault. Moreover, they look forward to the prospect of lives blighted by the disrepute and disadvantages of such training.

To the degree that insurance is nowadays patronised, this evil is abated. Women may bring children into the world under the protection of life insurance, assured that the children they bear will not be handicapped in the race of life by the spirit-breaking load of having been objects of charity. The difference between the picture of little children torn from a happy home and the arms of widowed mother, unable to support and care for them, and

the picture of little children saved to self-respect, educated and made useful to society by the proceeds of life insurance is an important one not merely to the children and to their mothers, but especially to society itself. For society is served by having children given the best opportunities to become efficient servants of their fellows.

But, in our analysis of this 1819 class of dependents, we find widows who but newly become mothers, and their babies. We even find women who in their widowhood bring forth posthumous children in charitable institutions. Thus, their babies grow into life from the shadow of such an origin and the mothers themselves had crushed and hopeless lives under this disgrace.

Moreover, even when father and mother are both living, we find among these dependents a most pitiable class, viz., those parents who are able with their toil to keep life in their children until sickness in the family exhausts the family store but who are without means to bury their dead.

Few among the well-to-do have any conception of what a blow it is to a self-respecting working man, who has paid his way all his life, to be compelled to call upon cold charity to bury his child. It is a sacrilege to him, a crime against the dead. He can never look up after it. Inquiry will convince the most sceptical that no agony of the poor compares to this, and that no experience is so likely to completely destroy that spirit of manly self-reliance which is necessary to good citizenship.

Life insurance is already developed to the point that none of these unfortunate need to appear in the dependents of the year 1819. Many of them will appear there, no doubt, owing to the imperfect patronage of that beneficent institution, a neglect which is owing largely to bad industrial conditions. But the institution of life insurance is now sufficiently developed so that the complete disappearance of these classes of dependents could, by the application of known and demonstrated principles, be brought about.

PAUPERISM AND OLD AGE.

Let us pass on. Among these dependents of 1819 we shall find old men. Now age is a natural phenomenon, coming to all men who survive. It should be provided against by thrift, for there has been time in which to do so. This same argument cannot always apply to provisions for widows or orphans, for in early life one may not have been yet able to save enough. But thrift, and thrift only, in the present state of society can provide for old age.

Among these old men we shall find many who have not tried to save, who possibly did not have the faculty of saving. Insurance can offer no effective provision for these, except that in endowments and old age annuities it does offer arguments and opportunities for regular saving which ought to help.

But in this class in 1819 were found many who had saved, even to the point of niggardliness, many in fact who in old age were suddenly reduced from wealth to penury. Among the causes of this undeserved pauperism are the following:

Destruction by fire—No calamity was more unavoidable, more dreadful, more sudden than this. In an hour, the entire savings of a life time of thrift could be swept utterly away. The home, the little stock of wares, the building upon the rents of which one depended for daily bread, all could be lost, all was dependent for permanence not merely upon one's own carefulness—and everybody in the nature of things is, sometimes—careless—but also upon the carefulness of neighbours. Whole cities were rendered homeless by single conflagrations.

The best that one could expect, if thus afflicted, was that generous neighbours would make up a purse out of charity, the worst that he could expect was the poor house and a pauper's grave. Insurance against fire, which became popular first was then but making its way. Now-a-days a man who permits himself to be thus afflicted, gives evidence of a want of prudence which makes his miserable condition a sort of penalty. Moreover, since his prudence is really an unwillingness to help bear the losses of others the condition is really deserved. Short-sighted stinginess about insurance premiums is thus punished.

Another cause of undeserved pauperism in old age is the loss of property, through endorsing for friends and especially, through signing bonds for friends. An endorsement on a note is bad enough, but the note fails due and that is the end of it. Your fate is soon known. But a bond is another matter. Liability is discovered often after years have passed. From this our modern surety system (or fidelity insurance) offers complete protection. To be sure, if the person bonded defaults, the surety company sees that he is prosecuted if it has to pay, which course strongly influences friends, and relatives to make good the default. But this is a good and not an evil. It tends to deter men from defaulting and it gives friends and relatives a chance to decide about making the amount good, instead of compelling them to do so as of old. There is a vast difference between signing a cheque of your own free will, and signing one which you never dreamed of having to sign, just because your name at the bottom of a bond calls for it.

Among the dependents whom we are investigating, we would find also, a sprinkling of persons who lost their all by the sinking of a ship in which

they owned shares, we find others who lost their all in wind storms, others who invested in worthless bonds, others who were robbed by burglars, others whom explosions had ruined, others who were pauperised by suits for damages for personal injuries. Against each of these things a prudent man may now protect himself, and society is protected also.

THE CASE OF THE DEFECTIVES

Let us pass now from the dependents to the defectives. First of all, among these, we discover a large member of the crippled herds of industrialism. These have been incapacitated in the process of production and transportation of commodities mainly through faults of their own, or of any-body else, for that matter, but through the inevitable operation of mechanical laws, these men have been maimed and disabled in the midst of their prime. They are like the wrecks of battle that they are not honoured or cared for as a matter of right, but as a matter of charity.

Insurance is doing a great deal to eliminate this class of defectives from the list although, confessedly, much yet remains to be accomplished. Accident insurance is now offered at reasonable rates to almost everybody whose time has a money value. Thus, it is possible for all, save those between whose incomes and the risks of their occupations there is a serious disproportion, to protect themselves. Unfortunately the necessities of men under our industrial system bring it about that in fixing wages little respect is had to the risks of the occupation. Consequently there are men who are yet unable to protect themselves. Moreover, a class among the dependents to which I did not refer, is composed of the families of those unfortunates.

Insurance offers complete protection to these. Companies are to day offering what they call contribution insurance, which protects the employees of any establishment against all accidents occurring during and arising out of their employment. They would gladly extend this insurance into annuities during the disability if the call for it existed.

But this insurance finds at present but a limited field, while employer's liability insurance, which really means a system by which even less is paid to the injured than when there was no insurance, is popular. We have no reason to decry this insurance, which is perhaps based on a wrong theory but which is leading to a true system, as inevitably as cause ever produced effect. But, in the interest of common justice, we have every reason to urge a new principle, which is that, in order that all costs of production and transportation should appear in the price of product and be paid by the consumer, and that no part of the costs should be finally borne by producers who do not enjoy the product, every contract of employment

should include in addition to the wages as compensation to the employee, the carrying of insurance in a solvent company payable to the employee in case of accidental injury arising out of his employment and to his dependents in the event of death because of such accident. Perhaps, no single extension of the principle of insurance would at this time remedy so great an evil in modern society.

PROVISION FOR THE SICK

Another class of defectives are they who have been incapacitated by illness or chronic disease. At the present moment the protection offered against this sort of calamities even in the United States is very imperfect. Some of the fraternities offer sick benefit. Recently also several stock companies have amended their accident policies to cover disability arising from certain diseases. Another stock company is offering hospital attendance or a weekly benefit during the continuation of a larger number of illnesses. Some of the fraternities are also offering lump sums as benefits upon the demonstration of complete and permanent disability. But comprehensive protection is yet wanting here, though it has been a feature of insurance in England and elsewhere for a long time and thoroughly tested. When it is perfected and generally patronised, it will eliminate a large class from the number of defectives who are, with their children, dependent upon public or private charity.

Germany has, by its State insurance system, already placed the support of such persons as belong to either of these two classes, upon the basis of a right instead of a charity. And during last few years, both England and France have enacted laws which provide for compulsory insurance of employees. This leaves India with its numerous Native States, the only great, civilised country that has done nothing to extend the operation of the principles of insurance so as to benefit the state and society to the utmost.

Mr Fouse has spoken against compulsory insurance, and referred to the scheme of compulsory insurance undertaken in Germany, which was devised by Bismarck. This is the sort of thing you would expect from Bismarck and which would be allowed in Germany, but under the conditions existing in England and America, such compulsory insurance would be impossible. State institutions have been failures on account of the small amount of business they have undertaken. There have been no agents and regular organizations and as a result these companies get left in competition. The Public Insurance Department of the Mysore State Insurance is a concrete example of this kind in India. But they afford a basis of comparison for other companies as to economy.

CONCLUSION

Now-a-days, in a purely business way and without sentiment, we see that our interests are

individually best served by acknowledging our solidarity. We do not know that you or I will die this week, but we may know that out of a large group of persons of our age a certain number will die this week approximately. Therefore, combining before a common danger, we propose to protect each other's dependent widow and children through insurance paid for by each for the selfish purpose of protecting his own. Is there in anything a more apt illustration of the complete agreement of altruistic practice with the theory of enlightened selfishness?

Insurance is the equalization of fortune. I have been already criticised for saying this. But it is true. If all the ill-fortune of the world were equalised by insurance, all the good fortune would also be equalised. This protection may even be extended over fields which we have considered belong only to crime and not to misfortune. My murder is as much an accident to me as if I had fallen and broken my neck. The robbery of my home is also an accident to me. Already Insurance Companies are protecting against these things. Yes, even the field of fraud is partly covered. Bonding, credit insurance and fidelity insurance for securities are now features of our commercial life.

Our laws which reflect our past social development are conceded to be deficient in the matter of remedies. The murderer goes to the gallows, but the family of the victim goes to the poor house. The defaulting bank clerk may be arrested and sent to prison, but no provision is made to keep the thrifty depositors from becoming public charges in their old age through no fault of their own. This deters men from committing crimes and frauds by the fear of punishment, but it offers no adequate relief to the victims.

This is the function of Insurance. The thorough application of its principles will so protect the individual from misfortune that his advance will be truly the measure of his desert. Each will be equally handicapped in the race of life by the average misfortunes of their running mates, none will be overwhelmed.

The more clearly men see their interests, the more surely they see that in all such matters these interests are common.

The same principle of united action in the face of a common danger, which applies when assaults are made upon a people by their foes, applies with even greater force to meeting perils that are always with us. Moreover, even in the matter of prevention, insurance is most influential, no distant prospect of loss will influence one like a smart, prompt increase of his insurance premium. Such discriminating increases have in a single generation changed the factories of New England from the most dangerous fire risks into the safest, and have thus saved millions of dollars of valuable

property The development of life and other personal insurance will ultimately have a similar effect upon the hygienic conditions and upon precautions against accidents

When all these things are taken into account, it cannot be denied that insurance is the most significant practical development of this marvelous century. It is nothing short of the enunciation of a new principle, that is, vitally necessary for the world's advance, the principle of practical, working solidarity. Upon that principle will surely rest the justice of the future. It is the principle, also, which is indicated in the famous command of the Nazarene who did not say "Bear others' burdens," but did say "Bear ye one another's burden,"

He who helps to carry the common burdens of this kind, and he only deserves to have his burdens carried, and the load which crushes the individual is lifted by society, by all men, as if it were a feather

The problem of insurance is to increase its social efficiency, to bring its benefits to a wider range of the people. Unless this shall be accomplished we must look upon life insurance in the same spirit that we do upon any other form of business enterprise. Unless the advantages of life insurance can be brought to the great masses of the people it cannot justify its claim to be a social institution of the first magnitude and importance

TOPICS OF THE TIMES.

AGRICULTURE.

Irrigation Work in India.

MR. WARD ON POSSIBILITIES

ON July 12, Mr. T. R. J. Ward, the Inspector-General of Irrigation in India, presented the prizes and certificates to the successful students of the Thomason College. In the course of an address, after a cordial tribute to the Principal and the Professors of the College, he said

I will now pass on to interest you in the progress of civil engineering in India. I may assume that you are all keen and anxious votaries of the profession you have chosen for your life's work and in consequence, during your reading, that you have noticed the vast sums that the State has set aside this year to make good the depreciation of our railways brought about by the magnificent service they rendered the Empire during the war. You have also noticed that big projects are afoot to connect India with Burma on the east and with Europe on the west, while inside India many important lines have yet to be constructed and large bridges built. You will also have read many articles on the need of better roads and more of them, while unbridged streams and torrents everywhere challenge the administrator to provide the funds for their conquest. The large cities in India that have been provided with modern sanitary and water supply installation declare that they have outgrown them and demand more earnest attention from the administrator and engineer, whilst the innumerable towns not yet furnished with these requirements of modern civilisa-

tion are fully alive to their needs. As for buildings, the war seems to have brought home to us that we are all inadequately housed and the demand is for better planned towns and more airy houses, with public buildings more in accordance with the aspirations of an age that has been stirred to its depths by the sacrifices made in the war.

PROSPECTIVE PROGRESS IN IRRIGATION

To pass on rapidly to irrigation, the branch of civil engineering that has occupied me during my professional life, the projects on the anvil in the different provinces in India will provide works which, when carried out, will about double the outlay incurred on irrigation works in India and about double the present canal-irrigated area. The borrowing of money for productive irrigation works was initiated by Lord Lawrence. Even allowing for the greater confidence with which such works are embarked upon now that we have so much more experience to guide us, it must be a generation or two before the works now in contemplation can be built and even longer before they will reach their full irrigating capacity.

With special reference to your own Province, you will be rejoiced to hear that the great Sarda Kichha Project has been sent up to the Secretary of State for sanction, while the Sarda Canal for the irrigation of the Province of Oudh has been sent back to be extended so that the project may provide that all the water available may be fully utilised. This project was got out by Colonel Forbes in 1870

And it was only sent up again to the Government of India to give them the information required to come to a decision about the destination of the waters of the Sarda, whether these should be partly used to sustain tracts more liable to droughts than those in Oudh or to be wholly allotted to that Province. At the time the Irrigation Commission threw out the suggestion for a formidable canal stretching from the Sarda to the Jamna that has been so thoroughly and ably investigated by your devoted Professor of Engineering, Mr Anthony, the people of Oudh were averse to irrigation. But the advantages of cheap water in agriculture were not so widely appreciated 15 or 17 years ago when Lord Curzon's Irrigation Commission sat as they are now, and in deference to the wishes of the people as voiced by their local Government it has been decided to use the waters of the Sarda in its own valley. The reasons for the change of opinion to which I have just referred are not far to seek. Originally the purpose of irrigation works was to help the cultivator in bad seasons, but the good roads, magnificent railways, fine docks, and great steamships have brought him into the markets of the world and he is now able to grow crops at a profit. To do this efficiently he requires a reliable water supply and thus it has come to be that irrigation works must now be constructed in the most up-to-date way, as free from defects of any kind as the railways, docks, and steamships built to transport the produce that the canals have irrigated. To this end the older canals are being remodelled, a work requiring a thorough knowledge of the existing irrigating system as well as a complete understanding of modern irrigation construction together with great administrative capacity to interest the cultivator in the improvements about to be made and retain his confidence during the time of disorganisation inevitable when channels are being remodelled.

CANAL CONSTRUCTION

I need hardly say that the foundation on which successful modern canal construction is built is drawing, estimating and surveying. It is fairly obvious that unless you can transfer your ideas clearly and accurately to paper and correctly appraise them they are hardly likely to bear useful fruit, and constructions that must be fitted to the earth's surface can

only be economically and efficiently constructed if the surveys, that is the earth measurements, are accurate and complete. The canals to be built from the Sarda River will test your training to its core. An irrigation canal should be designed from the tail upwards. First the village channels are worked out, these trace upwards, gather together into distributaries, and these again follow ridges that lead to branches of the main backbone of the country that, followed by the main canal, leads to the point on the river from which the whole irrigation system can be properly led. This is the simplest and most certain way to design, but it involves foresight. The surveys must be started some two or three years before the construction begins. But the gain to the irrigator who has the good fortune to be provided with a well-thought out scheme of channels is not to be priced in money alone. He is grateful to the engineer who will lay out and build his channels for him in the first instance. But if he is left to his own resources and has to lay these out to the best of his ability without knowledge and experience, he must of necessity make many mistakes but before these make themselves evident to experts a complicated body of water rights will have grown up and the energy and driving power required to remodel the channels is then out of all proportion to that required to construct them properly before water is turned on. And it is very doubtful, I think, whether full efficiency can ever again be attained. This is but an example of "the more haste the less speed," a precept that applies to all engineering work. Hence the exordium, practise your art with singleness of purpose, nothing is more bitter than the feeling that a work you have built with great pride and energy might have been better built had you had more practice.

VALUE OF CRITICISM

It is here that the great value of criticism comes in to the constructor and furnishes a reason why plans and estimates are made as complete as possible and fully discussed. Appreciative criticism can move mountains, but even destructive criticism should not be condemned.

I have said as much about works as you have leisure to consider now. Incidentally, I hope I have enabled you to realise why I have

examined your drawing, surveying and engineering courses with so much interest and I am glad to hear from Mr. Anthony that you come to his classes well furnished in applied mathematics and well equipped to maintain the reputation that Roorkee engineers have gained in this respect. You all know that an engineer is responsible to produce his calculations whenever required, and you will, I feel sure, make it your invariable rule in life to

make complete calculation for every work you build, never mind who designed it or how often works of its type have been built before. In this way you will not only acquire proficiency in calculations and avoid building works that may buckle or break, but you may discover mistakes overlooked by the most expert of us, your predecessors, and thus save your client from avoidable loss.

Efficiency Methods on Farms.

AMERICAN ENTERPRISE

Efforts to increase the volume of production and at the same time, reduce the amount of manual labour involved to a minimum always have been prominent characteristics of American industry writes "Dun's International Review," and the readiness with which manufacturers in the United States discard old and install improved machinery and methods regardless of the expense involved when they present possibilities of reducing production costs largely accounts for the fact that, in spite of shorter working hours and a much higher scale of wages, they are able successfully to compete with other countries in the world's markets. "Efficiency" has become the shibboleth of the American manufacturer, and this means the greatest possible output with the least expenditure for labour.

Now, while the so called efficiency methods have been largely regarded as pertaining chiefly to the factory and shop, it is becoming more generally recognized that the farm is also a factory, although a much more complicated one and more subject to abrupt changes in conditions such as those in the weather for instance, and there is a growing disposition among the farmers of the United States to proceed along the lines that have proved so successful in other industries. There are many labor and time saving agricultural implements and machines to assist them in their efforts and the progress already made is quite remarkable.

Prior to the appearance of the harvester about seventy five years ago, the gathering of all grain was done by hand and since the invention of that wonderful machine there have been introduced not only a countless number of improvements to that device but many new implements for other purposes. In fact, there is now hardly any class of work on the farm that cannot be done wholly or in part by machinery of some kind, and the displacement of animal by mechanical power is proceeding steadily, especially since the gasoline and kerosene motor has been rendered suitable for farm work. An excellent illustration of what the farmer accomplishes through the use of modern mechanical appliances is provided by the estimate that sixty years ago it required between four and one half and five hours' labour of one man to produce a bushel of wheat, as against less than thirty minutes to day on a properly equipped farm.

But great as this progress has been, there were many thousands of farmers in the United States up to a short time ago whose conservatism prevented them from taking advantage of the improved labour saving implements that

were at their disposal. They were content to carry on their operations with their single plows, one horse cultivators, straight tooth harrows and other tools, each of which called for the attention of a man, and it needed the outbreak of the war, which created a vast shortage of labour by taking their sons and other help for the army and for the production of munitions to compel them to seek means that would enable them to overcome this handicap.

USE OF TRACTORS

A tractor of some kind was of course the best solution of this problem, but a great many farmers lacked confidence in their ability to handle machinery of this kind. In instances like this good results were obtained by using a larger amount of animal power for plowing, harrowing, harvesting and other purposes and, with teams of six, eight and even ten horses, gang plows, twenty disc harrows and much wider harvesters and mowers were rapidly put into service on numerous farms. By this method one man could do from two to four times as much work as was formerly customary with a single team, but nevertheless for general all around adaptability, speed, reliability, low cost and the results attained, the tractor, together with the various devices specially designed for use in connection with that machine, has conclusively proved its superiority to any kind of animal power.

There appears to be a widespread impression that a tractor is a paying proposition only on the largest farms, and though this was probably true up to a comparatively recent date, it is very far from being a fact to day, because these machines are now made in such a wide variety of styles and sizes that a farm must be of very moderate dimensions indeed if it cannot use one with profit. Even the smallest are strongly and sturdily built and will give satisfactory service when used for the purposes for which they are designed. As a matter of fact, many owners of the lightest equipments find them a great convenience for working over the ground in their orchards, cultivating corn, beans, potatoes and similar crops and for many other tasks for which the heavier and more cumbersome machines would not be suitable.

With a total of more than 7,00,000 skilled farm labourers taken by the draft to say nothing of the number attracted to industrial centers by the high wages paid by the munition plants, and confronted with the imperative necessity of increasing the production of foodstuffs, naturally the most striking examples of offsetting the reduced labour supply by the employment of machinery have been provided by the great grain regions of the western part of the United States. Many farmers

who formerly depended upon horses or mules for plowing, harrowing and seeding promptly turned to the tractor and the results obtained were so satisfactory that predictions are now being made that the elimination of animal power on the farm is almost in sight.

But while the tractor as a source of power has met every demand made upon it, and at a much lower cost than where horses were used, an important factor in its labour-saving possibilities has been the introduction of a number of implements that practically take care of themselves while at work—among them being plows, harrows, seed drills, etc. It, therefore, became a not uncommon sight to witness the planting of a crop of wheat in a single operation, the tractor dragging behind it the plows, harrows, seed drills and coverers.

RESULTING ECONOMIES

Some figures showing the economies in labour and other costs secured by this method as contrasted with the old system of animal power may be interesting.

Disregarding the advantages derived from deeper plowing and the greater rapidity with which the planting can be done, one of the largest outfits of this kind will take care of a 12 bottom plow with the necessary harrows, seed drills, etc., and plant fifty or more acres of wheat in a 10 hour day, and at the same time require only three men to operate it. Contrast this with the average for plowing along with one man and two or three horses of from two to two and one half acres per day. Moreover, when rapid planting is necessary, the outfit can be worked for the full twenty four hours by employing extra shifts, as most of them are equipped with electric lights.

Of course the number of farms large enough to render the employment of outfits of this size profitable is limited, especially as their work is confined to a somewhat narrow range. But every farmer no matter how small his holdings, who has suffered to some extent from the inadequate supply of labour, has been compelled to adopt different methods. Necessarily, the man cultivating a moderate area cannot afford to invest in an expensive outfit that can be used for only one or two purposes, and as the small farms outnumber the large ones, manufacturers of tractors and other implements have found it advisable to produce machines that are reasonable in price, that can be operated by one man and that will give satisfactory service over a wider range of work than the expensive single purpose equipments.

There are many tractors now on the American market which are regarded as being ideal for the farmer who cultivates from 100 to 600 acres, and who does not confine his efforts to the production of a single crop. These machines are moderate in price and can be used successfully for so many different classes of work that they are rapidly revolutionizing American farming methods. These tractors vary from ten to twenty horse power and are widely different in design but all are intended to be operated together with the necessary plows or other implements, by one man. One of these machines is of the track-laying type and is very popular for use on uneven ground, hills or damp, sticky soil, another, of the ordinary four wheel type, is excellent for all ordinary purposes, while still another is designed so that the entire engine is suspended on two large wheels,

with a connecting frame for attaching it to specially devised plows or other implements.

The farmer who has used one of these tractors in connection with the proper implements has come to the conclusion that the horse is a very expensive motor because an average day's plowing with a two or three-horse team is not more than two and one-half acres at the best while the cost for every hour a horse works is estimated to be twenty cents, or about 2.40 per acre, exclusive of the man's wages and interest and depreciation on the cost of the outfit. After this, the ground has to be harrowed or otherwise prepared for the seed. On the other hand, with a three bottom gang plow one man with a small tractor can easily plow ten acres per day at a cost of \$6.00 for fuel and oil or about 72 cents per acre, and in addition can hitch a disc or other harrow and a soil packer behind the plow, thus preparing the ground for the seed at one operation—a matter of no slight consequence when time is at a premium and labour is lacking.

Only a few years ago it was generally thought that tractor cultivation of such crops as corn, potatoes, beans, cotton or similar plants grown in rows or hills was not feasible, and it was the universal custom for farmers to use one horse, or two horses and a small walking or riding plow or cultivator for this work. The up to date farmer now hitches his tractor, which has a clearance of 29 to 30 inches to three or four riding cultivators of special design, each of which, while requiring a man to handle it, will thoroughly cultivate four rows at one time. This means that three or four men do from twelve to sixteen times as much work as one, which is possible because the tractor can be driven at a much greater speed and can be kept much more steadily at work than can horses.

But there are many other ways by which the modern farmer, with the aid of his tractor, conserves labour. When it is not desirable or possible to hitch his grain drill behind his plow, he is not satisfied to proceed in the former way, using a single drill with a team of horses. Instead, he buys one or more additional implements of this kind and attaches them to his tractor. One man can attend to them all, as well as the tractor, as the latter can be equipped with a self-guiding attachment which keeps it moving in a straight line. Similarly, in mowing, he uses either the largest mower he can obtain or perhaps, two, and when the hay is cured, it is automatically loaded into a wagon and moved to the barn, into which it is transferred by a motor operated fork with the expenditure of about one tenth the time and labor that this work requires when done by hand.

OTHER IMPROVEMENTS

One of the most laborious and disagreeable tasks on the farm—the loading and spreading of manure—is now practically eliminated, this being accomplished with the assistance of the motor operated manure fork and the improved mechanical manure spreader. The farmer now drives his manure spreader alongside of the manure pit or pile and loads it in an instant with his motor fork, which is of the same nature as the hay fork above referred to. Then it is only a matter of dragging the spreader to the point where it is to be deposited and putting the gear into operation, the manure is automatically spread over the ground much more evenly than would be possible by any other means.

The tractor has also greatly facilitated the work of harvesting wheat, corn, potatoes and other crops. In the case of first named crops, it enables the reaper and thresher to be used in combination and the grain is delivered in perfect condition to be marketed. The latest machine is a corn harvester, which is reported to be giving excellent results. It cuts and bundles the stalks, detaches all the ears and husks them, all in one operation. Large potato growers have always complained that the heavy, cumbersome diggers placed too great a strain on the horses to allow them to be worked steadily, but as a result of the advent of the tractor a digger has been introduced which not only secures every potato, but sorts them into several sizes. This machine requires more power to operate than would be feasible to obtain from less than eight horses, but with the assistance of the tractor this is a matter of little consequence and wherever these vegetables are grown on an extensive scale, it will doubtless help materially to reduce the cost of production.

The milking machine is another device that the scarcity of help has rendered almost indispensable to the dairy

farmer, not only because it will do from four to twelve times as much work as can be done by hand, according to its capacity, but because it frequently improves the flow of milk, owing to its being easier on the cow than the average hand milker. It is so simple to care for and operate that many farmers who find it impossible to obtain men workers put these machines in charge of boys and girls. In addition, it has been found that the elimination of hand milking, which is universally recognized as one of the most disagreeable tasks encountered on a dairy farm, renders it much easier to obtain a desirable class of labor.

The foregoing are among the leading, but are only a few, of the many devices by which the up to date farmer has been able to increase the output of agricultural products in the face of a greatly depleted labor supply, and the superiority of the improved mechanically-operated appliances, due to their economy in both time and labor, has been so conclusively proved during the past four years that already many farms have entirely discarded horses, mules and other animals as a necessary part of their operating equipment.

INDUSTRIES. HOUSEHOLD HINTS.

By Mr. K. R. Chakravarti.

CARE OF UTENSILS

UTENSILS which are being used every day for cooking wear out very soon by rubbing with sand to get rid of the black crust that usually forms owing to the burning of fuel for cooking. This rubbing with sand not only wears out the vessels but also hinders the palm of hands engaged in the operation. Both these troubles can be avoided by using charcoal stoves for the purpose of cooking. By the use of charcoal stoves, the house can be kept clean without smoke and the necessity of one attending to the continuous burning of wood can be avoided. The health of the person attending to the cooking will be excellent as there is no necessity of exposing her or his eyes to the smoke. The advantages of using a charcoal stove can better be experienced than explained.

Iron charcoal stoves can be had from hardware merchants or blacksmiths. When these are considered to be a little too costly any one can make one of out of clay and sand with small rods of iron kept, just over the middle part of a cylindrical shaped oven, to hold charcoal when burning. When iron rods are not available a tin sheet cut to the size and perforated with a nail so as to allow free access of air, can be used. Some are under the impression that charcoal stoves cannot be advantageously substituted where the food has to be prepared for a number of persons but is meant only for a family comprising of two or three souls. It is only a misnomer. I have seen and experienced that any quantity of food can be prepared over charcoal

stoves, more expeditious and with less cost than by using fuel. The heat given out in a charcoal stove is more intense and uniform and consequently not more expensive than fuel.

APPLICATION FOR PRICKLY HEAT

Prickly heat is no doubt one of the most extremely annoying forms of urticaria that the inhabitants of the hot parts of our country are being molested from. Many applications for this have been suggested and their efficacy strongly urged by the various correspondents of the Medical Press, who propose them, but none of them seem to be generally efficacious. Thus, Sodium Bicarbonate, in strong aqueous solution, has long been a domestic application in general use, but it has been experienced that it fails probably is often as it succeeds. A weak solution of copper sulphate has also been highly extolled, only with the result that a very large proportion of those who resort to it, meet with disappointment. So we may go on citing remedies which may sometimes give relief but fail in the large proportion of cases. In this trouble, as in almost every other, the idiosyncrasies of the patient go to play a great part in the effect produced by the remedy. The skin eruptions are generally caused by congestion of the capillary vessels of the skin and anything that tends to relieve this congestion will give relief, at least temporarily. In this case, as almost in every other, prevention is better than cure. One of the primary causes for the congestion of capillary cells is constipation which is caused by the excess of heat. Keeping the

bowels clean by artificial means, such as flushing etc will tend to keep the capillary vessels healthy. It should be borne in mind that this precaution should be observed invariably when the efficacy of any external application has to be experienced.

CHEAP HOUSE-HOLD APPLICATIONS

Sandalwood paste obtained by rubbing wood on stone applied to the body will give a very agreeable feeling and healthy effect. When this is found to be rather a little mild, an admixture of Neem wood paste will give better results.

A bath powder prepared out of oil cake of mahua seeds available in our country is found to be highly efficacious in respect of skin eruptions. Malwa Tree (Bot Name Basia latifolia) is termed Huppi in Tamil, Ippi in Telugu, and Hippin in Kanaree. The process of preparation of powder is as follows. The oil cake is pounded into powder by means of iron pestle and it is soaked overnight in hot water pouring as much as that water will come to the level of powder. In the morning the powder shall have swollen in quantity when it is taken out and dried in the sun. When it is completely dry, it is ground into powder in a grind mill. This powder is improved by mixing one fourth of as quantity of soapnut powder and a little perfume.

EVAPORATION

Taking vaseline as the base it could be converted into an agreeable application for pruritic heat. Since it is only an external application, the relief cannot be expected to be permanent unless the precautionary steps in respect of keeping the bowels clean be strictly observed. For one ounce of vaseline $\frac{1}{2}$ oz of Ether sulphuric, $\frac{1}{2}$ oz of rectified spirits, $\frac{1}{4}$ oz of chloroform and 10 drops of menthol oil have mixed by rubbing and the whole kept in a screw copper pot. Addition of 10 drops of liquid carbolic acid will enhance the curative efficacy. It is sure to relieve the itching and burning sensation. By repeating this application and keeping the bowels clean, the malady could be got rid of entirely in a few days.

Another observation, in these complaints is as essential is keeping the bowels cleaned and it is in respect of undergarments. The salts formed by the evaporation of sweat on the cloth tend to give rise to the disagreeable sweat boils. It is these sweat boils that cause the itching burning sensation. Renewing of undergarments twice a day will go a great way in preventing the skin absorbing the salts, which give rise to the malady.

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Small Trade Recipes.

CHEAP TOOTH POWDER.

Take country gypsum (raw) as the base and pound it into powder sifting it at the same time

Mix with it powdered catechu in proportion of two ounces for a lb. If the gypsum powder is four pounds add soap powder 2 ounces, finely powdered cinnamon one ounce, sifted sugar 2 ounces, rose scent 21 drops, carbolic acid 1 ounce, dried ginger powder one ounce, tobacco powder $\frac{1}{2}$ ounce, alun powder one ounce, flower of blue vitriol (copper sulphate) 10 grains, and menthol crystals $\frac{1}{2}$ ounce. Mix all these ingredients and keep in airtight screw cap tin. This powder, though cheap, will be found highly efficacious.

HOUSEHOLD BISCUITS

In the absence of a specially constructed oven for baking bread and biscuits, it is deemed impossible to prepare biscuits. But it is not so. Biscuits can be prepared easily by means of some appliances. Perforated pots such as those in which ground nuts are fried can be had of a potter. This pot placed on charcoal fire with charcoal half full so as to fill up the portion perforated will serve the purpose. Take one pound of American flour and quench it with two ounces of water. The quenching should be continued till the mass becomes uniform and soft. Then add two ounces of sugar and four ounces of ghee and rub it well so that the ingredients mix well. Put in some cardamums and make them into small round pieces. Take a tin and spread the small cakes on it. Apply heat by means of charcoal till the charcoal inside the pot also catches fire. When it is blazing inside place the cakes that have been spread on the tin plate inside the pot and cover another earthen tray full of embers over the pot. In about five minutes the cakes inside shall get burnt and they have to be removed and another tin plate with cakes can be put in. In this way, biscuits can be prepared for household use.

CANDIED LOZENGES

Lozenges as every one knows, are being highly favoured, by one and all and especially by children. The preparation of lozenges does require machinery and consequently a large outlay. But the same can be prepared in the form of sugar candy. Take refined sugar for the preparation make it into a concentrated syrup by heating one pound of sugar with two ounces of water. Put in the required colour, $\frac{1}{2}$ ounce of tartaric acid and continue heating. When the syrup is so as to give tread when cooled. Add either peppermint or Peppermint essence, and before it is cooled down, pour it into a shallow tray made of iron or tin and allow it to evaporate. In two or three days it shall have crystallized leaving some traces of liquid on the surface and this liquid is what is termed molasses, which cannot be candied. Molasses can be separated by pouring the candy into another tray which has a slanting position so as to allow the molasses run down. When the candy is freed from molasses it could be broken to the required size and made saleable.

TRADE.

Japanese Competition.

POSITION REVIEWED

ADDRESSING the London Chamber of Commerce, Mr E T Crowe (Commercial Attache to H. B M's Embassy at Tokio) said he was of opinion that the danger of Japanese competition was not serious, provided that Great Britain soon returned to normal conditions, that the output was not unreasonably curtailed, and that profiteering was checked. The fact that Japanese industry was in a state of transition from the cottage to the factory, must affect the quality of her goods for some time. Japanese labour was plentiful but not very efficient. Roughly, Japanese labour cost fourteen shillings for males and nine shillings and four pence for females for a seventy-hour week, but the wages must advance owing to the rising cost of living. Comparatively little research work was being done in Japan, and most industries were still in the imitative stage. Japan had practically no iron mines, and was dependent on foreign sources for nearly all important raw materials. Her coal was very expensive and her means of communication very defective. Japanese goods were inferior in quality, but considerably cheaper than the British, and were generally non-competitive, as they were of a different grade, but the demands of the world would be so large for many years that there should be plenty of room for both British and Japanese goods. He did not doubt that Great Britain would retain her position as the greatest trading nation.

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Big Shop Trust.

SCHEME TO ABSORB BRITISH MULTIPLE STORES

The announcement is made by a *Times* correspondent of a vast scheme to organise a chain of multiple shops throughout the United States and the entire world, which will be backed by some of the most powerful business interests in the United States.

The enterprise will be undertaken by a company calling itself the United Retail Stores Corporation, having a capital, to start with, of £20,000,000. The new company intends to open retail stores all over the civilized world for the sale of all kinds of products principally dry goods, groceries, food-stuffs, tobacco and confectionery.

Existing companies controlling chains of multiple shops in various parts of the world will be absorbed either by purchase outright or the exchange of stock, or else new chains will be established. The scheme will start with the British Isles, and certain countries of South America and the East. The promoters expect that great economy will result from the wholesale buying of standard commodities on an enormous scale.

In many instances supplies will be manufactured by the company itself, or perhaps produced on its own farms. The principal men behind the scheme are Mr George W Whalen, Mr James B Burke, founder of the American Tobacco Company and the United Cigar Stores respectively. Since the dissolution of the American Tobacco Company by the Supreme Court in 1912, Mr Duke has been devoting himself exclusively to the British American Tobacco Company.

BUSINESS MAXIMS.

Fix your programme the previous night, making due allowance for emergent calls.

Stick to your business programme.

Carry out your resolutions fearlessly and promptly.

Answer to-day's letters to-day.

Be five minutes before time, like Napoleon.

Better to be a little beforehand than a little behindhand. A man lost an Order for £5,000 worth of goods because he was two minutes

late. The boss did not know whether he would come and had gone to order elsewhere as he was bound to settle "to-day."

The law of Necessity is one of those stern laws by which the Almighty rules the World.

You will be behind if you fail to study the prudent art of Concentration. Pin your mind down to master the point before you as if it were the only thing you had to through all Eternity.

FINANCE.

Indian Exchange and Gold.

THE OFFICIAL OBSTACLES

A press *communiqué* issued from Simla on the 21st instant states that the 'Secretary of State' has authorised the Ottawa Mint to sell on his behalf telegraphic transfers on India without limit of amount, for gold to be tendered at that Mint at the rate of one rupee for 91.68 grains of fine gold." This means that future shipment of gold from the United States to India will now be diverted to the Royal Mint at Ottawa where the gold will be held on account of the Indian Currency Department on which telegraphic transfers will be issued at the stated rate. It will also help to maintain the cross rate between New York and London which has lately developed considerable weakness as the gold can be sent back from Ottawa to New York in case of emergency. It will also lead to considerable saving of freight and insurance charges, but it will not meet Indian requirements as what India wants is the permission to import gold and sell it in the open markets. India does not wish, observes the financial correspondent of the *Times of India*, the gold due to her in balance of trade to be locked up in the Mint at Ottawa.

INDIA'S CLAIM TO SOUTH AFRICAN GOLD

The South African correspondent of the *Times of India* wrote a few weeks back of the impending crisis in the Rand Gold Fields, and quoted the President of the Chamber of Mines as saying that nothing could prevent a number of important gold mines from ceasing operations in the next few months. About one-third to a half of the mines were making at actual loss, and profits had been reduced to a tenth, as the working costs of the mines had advanced enormously during the war, and the price paid for the gold remained the same as before. One means of relief suggested to the mine owners was the sending of about £15 million of gold bar, a year to India where a high price could be secured in the open market, and also a favourable exchange. The desperate condition of the South African Gold Mines, and the grave effect of a reduced out-

put from the chief centre of gold production in the Empire, has at last led to measures being taken in London to secure an enhanced price for Transvaal gold. It has been officially notified in London that the Bank of England now permits the export of African gold from London and that the gold is available to the highest bidders. As a result of this notification a trial shipment of 50,000 fetched 87s per oz as against the Mint rate of 77s 10½d owing to the profit in exchange on shipments from London to New York. The enhanced price on the shipment to America due to the exchange is about 8 per cent more than the London Mint price, but no premium can be secured on the gold in the U.S. when the Mint is selling gold freely to the public. If the gold had been diverted to India, and but for the Indian ordinance it would have been diverted to India, the benefit to the African mines would be 25 per cent in exchange (for Indian exchange has advanced 25 per cent since 1915), and also a heavy premium, because the premium on gold in India at the present moment is about 50 per cent. That South Africa is on the verge of shutting down its gold mines, that India is willing to pay a fully remunerative price to these mines but cannot import the gold, and that the gold is diverted to a country where the price is much less than in India, are anomalies which need to be rectified soon. We have repeatedly urged the annulling of the gold and silver ordinances, and every week that passes shows more and more the absurdity of retaining them on the statute book.

FURTHER RISE IN SILVER AND THE NEED FOR GOLD

The price of bar silver, after advancing in London to 56½d for ready, closed at 56½d. This makes the intrinsic value of the rupee about 1s 9½d whilst its official rate is 1s 8d and this is creating a very uneasy feeling in the exchange market, with corresponding nervousness in most other markets. A rumour is going round that exchange is to be raised to 1s 10d but prominent bankers and other

business men think it unlikely that Government will make such a move till the Currency Committee have made their report, and which is expected about the end of October. At the same time it is recognised that the exchange situation has once again reached an acute stage in view of the great export activity in jute from Calcutta, and the growing difficulty of financing exports, and it is considered that the only remedy is to forthwith allow a free import of gold into the country. The *London Times* suggests that a portion of the Indian currency reserve of gold should be sold on condition that payment is made in silver rupees, resulting in considerable profit to the reserves, and reducing correspondingly the Indian demand for silver for coinage. The expedient suggested by the *Times* was tried by the Government in 1917, when about £1,000,000 of currency gold was sold by the Government to meet the threatened shortage of rupees, although Government did not insist on payment in silver rupees, and it would have been useless to insist on such payment so long as currency notes could be encashed for rupees. But the makeshift expedient of 1917, will not now suffice and what this country now wants is imports of gold on a large scale. The city of London has to realize that considerable amounts of gold must now be diverted to India, otherwise the finance and trade of India will be confronted with an impossible situation before long.

Bombay Chamber's Views.

The Bombay Chamber of Commerce, endorse the view of the Bengal Chamber regarding the desirability of stability of exchange, although the rate at which exchange may be fixed can only be arrived at by an exhaustive examination of the silver position of the world. On this point, members of the Chamber cannot be expected to be unanimous, as the points of view of importers and exporters naturally differ. In the meantime, the memorandum points out, it is a matter of prime importance to the commercial community that some temporary stability should be attained, and the Committee are of opinion that some definite statement of policy should be made as early as possible, applicable to the period that must intervene before the silver position can be gauged with sufficient precision to admit of an enunciation of the final policy.

Regarding the absorption of silver which has been in a measure responsible for some of the currency difficulties with which the Government are confronted, the Chamber holds that it is impossible to disregard entirely the sentiment of the native of India which leads him to hoard the precious metal. It will be desirable, they say, to put an end to the present embargo on the importation of gold and silver as early as possible even although there may appear to be little prospect of obtaining the supplies in the near future. In this connection the committee notice that in 1916-17 an aggregate of four-and-a-half million pounds of gold was produced by the Indian Mines. "It would seem worth examination whether this might not be utilised in India either as backing for a new gold standard or as a more immediate measure to satisfy in some degree the incessant demand on the part of the natives of this country for precious metals. The Government control must be regarded as a necessary evil in certain circumstances but should be abolished as soon as possible. The present system of maximum rates is open to serious objection because whenever there is pressure on the part of exporters to sell bills, rates quoted by the exchange Banks cease to be effective, and bills can only be sold if the seller will provide some proportion of cover for them."

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Small Savings in England.

HOW THE SMALL INVESTOR HAS COME TO THE FRONT

The third annual report of the British National War Savings Committee shows that during 1918 the actual amount invested in War Savings Certificates was £108,348,782, compared with £67,010,817 in 1917.

The total number of War Savings Certificates sold since the first issue of the security was 280,701,054, of a cash value of £217,543,317. A sum of £9,710,172 has been repaid, leaving a net sum invested of £207,833,145.

An analysis of the contributions of the small investor to State securities shows that during 1918 contributions of £28,700,000 were made to the Post Office issue of National War Bonds. In addition, the increase of deposits over withdrawals in the Post Office and Trustees Savings Banks during 1918 was £38,813,000, compared with £5,683,000, in 1917.

SAVED DURING THE WAR

These investments, added to the net proceeds of War Savings Certificates, provide a sum of £179,575,000, as the contribution of the small investor during the year, and bring the grand total during the war to £432,741,000.

The work of the Committee during the year was done at a cost of £135,357.

* * *

Tata Industrial Bank at Luckow.

On the 4th August, the Lucknow Branch of the Tata Industrial Bank was opened by Mr. E. H. Ashworth, I. C. S., the Additional Judicial Commissioner of Oudh, and among those present were Mr. Gray, Manager of the Cawnpore branch, and the representatives of the banking institutions in Lucknow. Mr. S. P. Mehay, Manager of the Lucknow Branch, said the Bank had been established at the suggestion of many business men in these provinces and was the second of a contemplated

network of branches in Upper India. The primary object was to encourage existing Indian industries and also to create and develop further industries.

In the course of his speech Mr. Ashworth said that British enterprise had failed to unearth the hidden hoards of wealth, which he felt sure, existed, lying unproductive in private hands. "Capital," he said, "is the life-blood of industrial enterprise and the industrial system in India is sluggish because the arteries that circulate this life-blood are choked. A new industry sponsored by an established firm of repute may find no difficulty in attracting capital, but for the industrial regeneration of India it is necessary that small industries should be started by obscure persons. It is necessary that the small local concern supplying a local need (which in another generation may blossom out into a provincial or imperial success) should find access to the savings of the petty capitalist."

TRANSPORT AND POWER.

Flying in India.

Lord Montagu of Beaulieu, who read a paper on "Aviation as Affecting India" before the Indian Section of the Royal Society of Arts recently predicted a great future for flying in the country.

The East, he said, was more suitable for flying than what we knew as the West, and in the whole of the East there was no country more suited to aviation than India. Whether the most important factor in flying, meteorology, be considered, or easily made landing grounds, or local supplies of liquid fuel, there could be but one conclusion—namely that India was an ideal country for aviation. And if incentives were wanted, the land and sea communications of India, both internally and externally, left much to be desired. When one came to consider also the communications between India and these islands, it was remarkable that certain circumstances, some of them commercial and some of them geographical, prevented anything approaching rapid communication being carried on between Western Europe and Indian ports.

A GAIN IN TRANSPORTATION

It was a maxim now realized by every one who had studied aviation that the longer the distance the greater the gain of the airplane over other methods of transport. Whether we took the shortest possible direct route to India—say, 8,000 miles in length—or the longer journey now being used by way of France, Italy, Egypt, Palestine, and Mesopotamia—some 5,400 miles in length—in either

case many days were saved. As to air mails (carrying airgrams, as he would call them), when daily communication was established it was safe to prophesy that the present block of several days' delay on the Eastern Telegraph Company would be relieved at once. The cable companies, rather than the shipping companies, would feel the competition of airgrams.

When, two years ago, he prophesied that the England to India route would be the first long distance route to be accomplished, and that the accomplishment of it would be a landmark in the history of the world, and be the first useful long distance journey by air, there were many who jeered, as people had always jeered at prophets in all times and in all countries. But already two Handley-Page machines, with Rolls Royce engines had accomplished this flight, about double the width of the Atlantic, and in a few months time regular services would be established without any doubt. In flying between England and India there is a long but well mapped out route to some extent provided with insufficiently numerous but regular stages, landing-grounds, and spare part depots.

With the exception of the flight over the Channel, France, and Northern Italy, no serious climatic disadvantages existed. As regards Imperial or, international control, the present air routes to India passed with the exception of France, Italy, and Crete, entirely under the direction of the British Empire. Moreover, when India was reached, it

was by no means a dead end as some might think India was half way between London and Australia, and beyond India are many important parts of the Empire. The winter conditions in Siberia and Tibet would preclude regular flying from China and the East to Europe for many years to come, and the route south of the Himalayas was therefore certain to be used. The Northern Plains of India, from Peshawar to Calcutta, would become one day one of the world's greatest airways. He considered that Heliopolis (Cairo) would be the most important single centre of air transport for the Old World—Europe, Asia, and Africa—for thence would radiate services to East, Central, and South Africa on the one side, and on the other to India and countries beyond.

THE QUESTION OF MAILS

In considering the matter of mails and whether it would pay to fly them, it was a question, of course, how much the letter-writing public in India—a small number all told—would pay for increased speed, even if they would pay at all. But the answer to this question could only be ascertained after trial for some time, and would probably have to be considered in connexion with passenger services, as was the case with the present mail train and mail ship services.

Dealing with the question of hill stations, he referred to the difficulties in the matter of landing grounds. At Simla there was perhaps one landing ground possible—namely, Annandale. But very soon aeroplanes would be able to land on an area of ground equal to about four to six tennis lawns, and the Government of India could easily make, in many places, artificial small flat spaces ending in ramps.

Lord Montagu mentioned in passing that Major Tweedie had recently landed at Annandale, and though he believed the machine in which he was flying was slightly damaged, he was the first person so far as he knew to land at a hill station in India, and certainly the first person to land in Simla in an aeroplane.

INTERNAL ROUTES

He suggested that the most important internal routes in India were —

1. Bombay, via Delhi and Lahore, to Peshawar
2. Bombay to Calcutta
3. Bombay to Madras
4. Bombay, via Mysore, to Colombo
5. Bombay, via Baroda to Karachi
6. Calcutta to Madras
7. Calcutta, via Cawnpore, to Delhi
8. Madras to Colombo
9. Madras, via Hyderabad, to Jhansi, for Delhi and the north
10. Peshawar, via Indus Valley, to Quetta and Karachi
11. Delhi, via Bikanir, to Karachi

Having mentioned that several of the great princes in India were already keen on aviation, he said that, generally speaking, the less Government control there was over any new development in the world the better. He would say, at the risk of being officially censured for daring to doubt its divine wisdom, that the Government of India had better encourage private enterprise in aviation rather than endeavour to manage all air services and operations itself.

He called attention to what he described as the insignificant drawbacks of the Indian climate, and observed that from September to June on nine days out of 10 the weather was perfect for flying, the visibility exceedingly good, and the average air currents under 10 miles an hour in velocity.

In recent conversations with the Postmaster-General in India, Mr Geoffrey Clarke, he learned with pleasure that he was strongly in favour of air mail services being started in India at once, and hoped that contracts would be sanctioned with private commercial companies rather than any attempt made to work direct through the R. A. F. The Government of India should make contracts with groups or companies really capable of carrying out their contracts in the same way as the sea mails were now confided to the care of the P. and O. Company.

PHOTOGRAPHY AND MAIL

It was often asked how soon passenger services by air would be established between India and England. In reply he would say first of all, let us establish for at least a year regular postal services, for the experience gained thereby would avoid loss of valuable lives and the discouragement which was bound to come when only a proportion of the hopes we set out with were realized. Moreover, it would be a long time before it was commercially profitable to fly passengers on account of their weight compared with mails. It was clear that at first the main payable traffic by air must consist of what the Post Office called 'mail matter,' and he was sure that the commercial world in India, here, and elsewhere, when services became regular—the most important point of mail services—and rapid, would use air services very largely.

He pointed out that there was the use of photography for transmitting letters, and said a typewritten letter could be photographed in an exceedingly small compass and enlarged again by the recipient. Probably at least 1000 words could thus be sent for an ounce by this process. The Times of a certain day could be thus reproduced in India within three days exactly as the original was published in Printing House Square. As to mail services to England, he would like to bring to their notice the fact that the present route, via Cairo, Damascus, and Mesopotamia, was by no means the most direct, and that something like

1,600 miles would be saved by following a direct line from Cairo via Akabah to Basra, the distance being only 790 miles between Cairo and Basra.

In conclusion, he said that, as the Empire of India was the most populous, the most important commercially, and the most vital to us, of all the great dominions of the Crown it should have all the advantages which might be derived from the use of aircraft as soon as possible.

MAJOR-GENERAL DELLY, who presided, said that arrangements were now being made to run a mail route from Cairo to Karachi.

* * *

Control of Railways

THE CANADIAN SYSTEM

(*Times Trade Supplement*)

Recent developments in the Railway situation in Canada and the position of British railways as the result of the war have attracted attention to the scope and working of the Dominion Board of Railway Commissioners. It is this Board which fixes rates and adjudicates upon matters which affect rival corporations both as to construction, routes, and relations with the Government.

The Commission came into operation on February 1, 1904, in accordance with a Federal Act of Parliament passed in the previous year. Writing of the functions of the Railway Commission in May, 1906, Mr. A. C. Killam, K. C., the then Chief Commissioner, said—

The Board is authorized by general provisions to order a Railway Company to do anything required by statute, and to forbid the doing or continuing of anything contrary to statute. The Board is made a Court of record, and is given full jurisdiction to hear and determine all matters, whether of law or of fact, and, as respects the enforcement of its orders and other matters, it is given all such powers, rights and privileges as are vested in a Superior Court. The decision of the Board on any question of fact is binding and conclusive upon all companies and persons and in Courts. There may be an appeal from an order of the Board to the Supreme Court of Canada on any question of law, under certain conditions. An unlimited right of appeal from the Board to the Governor-General in Council is given. The Board may exercise its jurisdiction on complaint of any party interested or it may of its own motion, and is obliged at the request of the Minister of Railways, to inquire into and hear

and determine any matter or thing which, under the Act, it might inquire into, hear, and determine on application or complaint.

A more extended official summary of the powers of the Railway Commission shows that it possesses—

1 Absolute regulative powers in regard to rates, preferences, discriminations, rebates, and secret rates.

2 Supervisory powers in regard to through rates and through routes.

3 Power to compel equal, proper, and reasonable facilities for shipment to all persons and companies.

4 To regulate traffic agreements.

5 To regulate and supervise highway and railway crossings.

6 To investigate into serious accidents, and the causes of accidents.

7 To exercise a general supervision and control over safety appliances and all matters touching the convenience and safety of the public and employees of the railways, the safety of property and the operations of trains and the railways generally.

8 To regulate and supervise the general construction of railways.

9 To supervise the opening and closing of railways in the interest of the public safety.

10 To see that the various railways obey the provisions of the Acts, general and special, under which they operate.

The Board and its functions were enlarged by the Minister of Railways' Bills in 1908, increasing the jurisdiction of the Board, creating an Assistant Chief Commissioner at a salary of £1,800 per annum, with two additional Commissioners at £1,600 each, and giving to the Commission control of telegraphs and telephones in addition to the multifarious concerns already under its charge.

During the war the Railway Commission performed a varied and efficient service for Canada, which included oversight, and regulation of all the railway business of the country—functions which in the United States were divided amongst many State Commissions, and in Canada were becoming more complex day by day.

Public opinion in Canada is not unanimous as to the merits of the question which is now

under consideration by the Dominion Government. Among the masses there is undoubtedly a growing feeling in favour of the nationalization of railways, and in the meantime any discussions of the Railway Commission as to rates naturally expose it to hostile criticism from the public, the railway wage-earners, or from those whose capital is largely invested in railway undertakings.

Professional Engineers in India.

The movement of the Engineering profession to found an Institution for itself in India passed another stage on Wednesday, the 10th July, when a revised code for the proposed Indian Society of Engineers was presented for the consideration of a meeting held in Gorton Castle, Simla.

The re-drafted code contains the modifications and additions which have been suggested to the Drafting Committee since the great Cal-

cutta meeting of January, and the business of the Local Joint Sub-Committee at Simla was to report on the new code to the Organizing Committee, whose members are too widely scattered throughout India to allow them all to meet frequently without great inconvenience and expense. Consequently, this Sub-Committee consisted, to some extent, of members co-opted from amongst prominent engineers available within reasonable distance of Simla and there was general regret that this area did not include any engineers in private practice or in commerce. The meeting under the Chairmanship of Mr. T. R. J. Ward, C. I. E., M. V. O., M. I. C. E., Inspector-General of Irrigation in India (Chairman of the Organizing Committee) numbered 23, including the following—The Hon. Mr. F. C. Rose, M. I. C. E., Secretary to Government, P. W. D., Mr. R. Meredith, C. S. I., C. I. E., Chief Engineer Indian Telegraph Department and others.

ECONOMIC DEVELOPMENT.

Treatment of erring youths.

A school where erring youths are taught to be good citizens is that of Mr. Tomeoka, principal of the Kato Gakko in Sugamo, Tokyo. The school has been in existence for over twenty years, during which time over three hundred boys have been taken from unhealthful and immoral surroundings and aided in becoming good men and self-supporting citizens.

Mr. Tomeoka was for years chaplain in the Sorachi prison in Hokkaido, and during his years of work among the unhappy convicts, he came to the conclusion that the best way to save men from being the victims of their wrong habits was to safeguard and train them while they were yet young and when the lawless tendency had not developed to any great extent.

For this reason he established the Kato Gakko, a reform school for boys from the ages of nine to sixteen. At present there are thirty boys in the institution. Some of them were put there by their parents, because they were unmanageable, some were sent to Mr. Tomeoka by the governor of Tokyo Fu. As there are no juvenile Courts in Japan, Mr. Tomeoka is obliged to get hold of his boys through the police and through the Governor.

As the representative of the "Japan Advertiser" walked through the spacious grounds of this school, and saw the boys running about playing a game which resembled the American game of "Black

Man," the invaluable work being done by this school was easily realized. Older boys were playing tennis, and playing the game well, with a soldier playing with them.

On questioning the teacher who was acting as guide, he informed the questioner that the soldier was a boy who was in the school when he was quite young, and when he grew older, had gone to Keio University finishing there and was now doing his military service.

"He is a fine boy, now," said Mr. Shinozaki, with pride in his voice. And indeed he had cause to be proud, for in addition to this boy, eighty per cent of the boys who have been in the school have turned out much better and stronger morally than they were when they entered.

"Mr. Tomeoka believes in feeding the boys well, in giving them plenty of sleep, and in having plenty of congenial work for them to do," said Mr. Shinozaki.

BOYS TAUGHT FARMING

With this creed, Mr. Tomeoka has established a farm in Hokkaido where the older boys are sent to learn farming. His experience has taught him that children brought up in the city are not strong enough to stand farm life at first, and they must have leisure and training at his school before being sent out to the country. Numerous tenants are engaged in farming the huge tract of land and only

a few acres, perhaps 120 are farmed by the twenty boys who are at present there. They are in charge of a number of men experienced both in farming and in handling boys.

In the school here in Sugame, there are about 3,800 tsubo of land, which has a large playground, a tennis Court, and several houses on it. The cottage system of housing is followed, there being three cottages besides the houses of the teachers. In each is a master and matron who give the boys the best of care. Mr Oshio the Vice-President of the School, as well as Mr Tomeoka and Mr Shinoraki, was in America for a long time studying the best methods offered over there for the care of delinquent children. Mr Oshio is a friend of the editor of the Survey Magazine, the Social Service Magazine of America and has contributed to it.

In addition to three teachers who give lessons in regular work, there are two teachers of industrial subjects. Carpentry and laundry are taught to the boys who show a predilection for manual labor. Others who can qualify enter Keio or some other university when they are old enough and take up a profession. The individuality of the child is conformed to fit him for the work for which he is most capable.

IMPORTANCE OF PLAY

Kite flying and other good wholesome outdoor sports have been almost killed by the rapid industrialization of the city, and the city child now has very few places in which to play. Mr Shinoraki says that the playground is just as necessary here as it is in America. The large amount of space devoted to this purpose in the Kato Gakko proves that they so regard it here.

To the visitor watching the boys play, they did not look as if they were such bad characters, and on being questioned as to the crimes of which they were guilty, Mr Shinoraki said that nine out of ten of the boys had come under Police jurisdiction because of petty thieving. Such little boys were there, boys who seemed hardly old enough to be running around by themselves, yet they were in a reform school for stealing. Some were there because they were disobedient to their parents, and some because they were cruel. Mr Shinoraki says that the predominating cause for juvenile delinquency is the bad influence of the motion picture shows. He deprecated their irredemptive effect on the character of these young boys who have no other form of amusement which is wholesome and good.

In all Japan there are about fifty reform schools only one of which is for girls. It is located near Yokohama. They have all started within the twenty year period during which Mr Tomeoka's school has grown and done good work. Of the more than three hundred boys who have passed through the school, many often come back to visit

the place where they received their first help toward a right life.

In Tokyo Fu there are four reforms considered in every case, and the effort is schools, two being private schools, one a city institution and one kept up by the public. It is at Ogasawara Island and only the worst boys are sent from Mr Tomeoka's school to that one to have a new trial there.

Other relief institutions in Tokyo Fu, engaged in general work, are four in number. There are three charity organizations, two organizations for the study of charity problems, eleven schools for the education of poor boys, eight orphanages, eleven day nurseries, five schools for the blind, two for the deaf and dumb, and several others of various kinds. All of these institutions which have to do with the care of delinquent children were started after Mr Tomeoka's school, he being the pioneer in the work. This summer he is sending a graduate of the Imperial University to America to a school in order to learn the latest methods in caring for delinquent children.

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Industrial Laboratory at Coonoor

The Madras Government have approved the proposal to start an Industrial Laboratory at Coonoor.

The Honorary Superintendent (Sir F. Nicholson), Government Fisheries, Coonoor, wrote to the Director of Industries, Madras, dated the 25th April 1919, as follows:—

I have the honour to make the following suggestions regarding my proposal to employ at Coonoor a young chemist in examining certain minor industries and industrial problems. My proposals for a fruit preserving factory will follow later, the present letter deals solely with the proposed work for a chemical assistant.

2. The minor industries include the manufacture of (a) vinegar, (b) inks, (c) adhesives, (d) certain special toilet soaps and the mode of putting them up, (e) the extraction of certain volatile oils and essences.

3. I think you will agree with me that the goods mentioned are desirable products in this Presidency. We have some 45 millions of people without an ink factory, dependent on outside supplies (I have just met with Japanese ink in 'penny' bottles, sold in the Coonoor bazaar at 3 annas), provided with few adhesives and only at exorbitant prices (e.g., Rs 1-4-0 per small bottle of office gum) or of poor quality, vinegar is much in demand and should not, being a very cheap product,

have to bear the relatively enormous cost of transport from England, while toddy or other country vinegar is ordinarily neither good nor cheap nor palatable. As regards toilet soap preparations, I propose to obtain toilet bases from the Calicut Factory and experiment in working them up on recipes known to me or with certain experimental additions and methods. Any success will of course be communicated to you for the soap factory. It also seems to me worthwhile to attempt the extraction of essential oils, etc., from various odoriferous plants not yet worked and which grow or will grow profusely and rapidly in this neighbourhood, methods and apparatus moreover can be varied, instead of depending solely on the ordinary still. There are other matters for experiment which for years I have had in view, but without chance of attempting them.

4 The minor industrial problems relating mainly to the cannery difficulties which require leisurely and instructed handling before introduction at the cannery there are several problems, essential to perfection in canning which I have not succeeded in solving, and for which no guidance is found in books these have to do with oils, lacquers, cements, etc.

5 Colonel Cornwall has kindly promised me, at all events temporarily and on certain conditions to which I have acceded, the use of a vacant laboratory at the Pasteur Institute, and will permit me to put up a temporary shed for coarse work and processes, such as the preparation of new materials for inks and adhesives, etc. This will get rid, for the present, of the laboratory difficulty mentioned to you in person, viz., that of building accommodation whether in my own compound or elsewhere.

6 With this laboratory I can begin work at once without further loss of time. I shall have to order special apparatus from home but can probably borrow or buy out here enough to begin with. If therefore Government will

(1) Sanction a young chemical assistant with a laboratory attendant on about Rs 30 and a clerk-accountant on the same pay, and two lascars, and

(2) Rs 6 000 for (a) capital expenditure on laboratory and plant, and (b) on working expenses for the purchase of raw material including containers for inks, adhesives, etc., I can

begin at once. I do not need any personal allowance since Government have recently granted me, as Honorary Superintendent of Fisheries, a travelling allowance which amply suffices for all personal needs, on the cessation of this allowance when I quit fisheries about August, I can again address you, if necessary, on this point.

7 The proceeds, if any, of sales of finished goods will of course be paid into the Government treasury, and be set off against expenditure. I do not see why, after six months experimental and initiatory work, we should not obtain considerable returns, if not profits.

8 The individual to be appointed as chemical assistant should be appointed by you, the laboratory attendant, clerk, and peon I may whole appoint locally as temporary hands. The work should be under the supervision of yourself as the Director of Industries to whom I am ready to be responsible. The Rs 6,000 may be placed at my disposal as a lump sum, so that I can draw on it as needed without incessant references to you, the usual account being kept.

The following Government Order—No 1243, Revenue (Special), dated 24th June—1919, has been passed—

The Government approve the proposal to start an Industrial Laboratory at Coonoor and sanction for a period of one year, the following staff for the Laboratory —

(1) one chemical assistant on a pay not exceeding Rs 150 per mensem

(2) one laboratory attendant on Rs 20 per mensem,

(3) one clerk-accountant on Rs 30 per mensem, and

(4) two lascars on Rs 10 per mensem

The establishment will be eligible for war allowances in accordance with paragraph 2 of G O No 16, Financial, dated 7th January 1919. The lascars will be paid from contingencies.

2 A sum of Rs. 6,000 will be placed at the disposal of Sir Frederick Nicholson for capital expenditure on laboratory and plant and on working expenses for the purchase of raw material, subject to the condition that the usual accounts are kept.

NEWS AND NOTES.

THE Indian Industrial Conference Office announces that Mr Ambalal Sarabhai, its Honorary Joint Secretary has contributed Rs 1,000 towards the funds of this conference

The Jute business has commenced in the jute producing districts in Eastern Bengal. In the principal jute marts in Noakhali the average price is Rs 16 per maund. It is believed that the price will rise further

Mr N B Saklatwala, of Messrs Tata, Sons and Company, has consented to act as adviser to the Indian Munitions Board for the disposal of textile materials surplus to war requirements. The necessary arrangements are under discussion with Mr Saklatwala and will shortly be announced

In succession to Signor Mari, the Italian silk expert, who resigned his service in Mysore State sometime ago, the Government of Mysore have engaged for three years a Japanese expert, named Yane Muru to undertake scientific research in sericulture and to develop the silk industry in the State.

We understand that the dividend paid for the last year by the Krishna Jute and Cotton Mills Co., Ltd., Ellore, was Rs 80 per cent and not 75 per cent as stated in the article on "Industrial Situation in South India" which appeared on page 7 of our July number. We are obliged to the Secretary and Treasurer of this Company for this information

The Japanese are establishing commercial houses in South India. They have already opened business houses in British Cochin and have now come to Travancore, writes a Travancore correspondent. Japanese gentlemen of the Japan Cotton Trading Coy have come to Quilon with the object of opening negotiations for the purchase of the Darragh Spinning Mills.

A Simla message says that intimation has been received that the prohibition issued by the Government of Canada, against the landing of skilled and unskilled labourers at ports of entry in British Columbia has been renewed

from the 9th June. The Governor-General-in-Council accordingly requests the local Governments to make this intimation as widely known as possible

The Burma Oil dividend is 30 per cent for the year on the ordinary share capital, equal to 45 per cent on the capital previous to the distribution of the bonus shares last year when 32½ per cent was paid. £180,000 is put to the general reserve and the carry forward of £1,776,000 includes an estimate for the excess profit of £1,580,000, calculated at the rate of 80 per cent.

A press *communiqué* says the Government of India have arranged that a small instructional class will be held, as last year, for officials deputed by the Indian States for training in the methods of collecting and compiling agricultural statistics, especially those relating to crop forecasts. The class will be held in the Department of Statistics at Council House Street, Calcutta, for a period of four weeks commencing from November 3, 1919

The Bombay Chamber of Commerce approve the proposal to hold a conference of the Chambers of Commerce in January 1920 and express an opinion that the first meeting should be limited to European Chambers of Commerce including the Ceylon Chamber. They add that the question of inviting the leading Indian Chambers to send delegates might form one of the items for discussion on the first agenda paper

The Cawnpore Branch of the Tata Industrial Bank, was opened on 1st August, by Mr N C Stoffe, I C S, Collector. It is understood that the local directors will include the Hon. Mr T Smith, (Managing Director, Murr Mills), the Raja of Mahmudabad and Lala Kamrupat, a prominent Marwar merchant. Mr B. L. Gray is the manager of this branch. Branches will also shortly be opened in Lucknow and Allahabad

The Bombay Millowners Association in their representation to the Government have drawn special attention to the low amount

allowed for the depreciation of the machinery rate which has remained at 5 per cent during the past 20 years. In view of the trebling of the price of Machinery since 1914 the Association hopes that Government will fix allowances for the depreciation on the basis of the existing prices when calculating the excess profit

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Mr Kashichi Shimizu, of Shoko-sha, Ltd., of Tokio, special agent for the "Commercial and Industrial Directory of Asia," published at Tokio, is now in Bombay collecting information for the Indian section of the 6th Edition of the Directory, which is to be greatly enlarged and improved. Merchants and others interested in business with the Straits, Japan and the Far East generally should address Mr Shimizu c/o the Japanese Consulate, Bombay

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The trade returns for June, 1919, published by the Department of Statistics, India, show the imports amounted to £7,893,000, a decrease of £1,740,090 and exports (including re-exports) to £13,622,000, an increase of £60,000, as compared with the corresponding months of 1918. There was a large decrease in the exports of food, drink, and tobacco (mainly food grains) amounting to £2,399,000 and articles wholly or mainly manufactured decreased by £357,000 but raw materials and articles mainly unmanufactured increased by £2,490,000. During June of the pre-war year, 1914, the imports amounted to £8,455,000 and the exports to £14,555,000

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The *Travancore Government Gazette* of the 22nd July contains the following notice — It is hereby notified for general information that in pursuance of Government Order No E 2041-b of 18, dated the 4th June, 1919, in Agricultural class, consisting of 8 pupils, will be started at Nedumangad from the 1st Ohngom, 1095, in which a full course of instruction in Bee-Culture will be given with a view to its introduction as a home industry. An award of a grant of Rs 12 for the purchase of a complete set of apparatus will be made by Government to each pupil who comes out successful at the end of the course

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The number of palm trees which are usually tapped for palm sugar in the Madras Presidency

is estimated by the Department of Agriculture at 2,500,000, and the yield of jaggery (crude sugar) therefrom at 35,000 tons (of 2,240 lb). The total palm-sugar production of India, writes the United States Consul at Madras, is stated to be about 300,000 tons, of which Bengal produces about 100,000 tons, valued at £480,000. India's total production of sugar, both from cane and palms, is somewhere about 3,000,000 tons per annum. The area under sugar cane in Madras is less than 1 per cent of the total area in British India, the United Provinces being the great producing area

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One of the noteworthy consequences of the war, according to *Metal und Erze*, is the great increase in the output of wolfram. Before the war the whole world-production did not exceed 10,000 tons annually. The present output is at least double that quantity. An approximate estimate gives Portugal, Spain, France, and Great Britain, 2,500 to 2,800 tons, North America, 6,000 tons, South America, 3,000 to 3,500 tons, India, Siam, the Malay States, and Australia, 5,500 to 6,000 tons, China and Japan, with Indo-China, 800 to 1,200 tons. The stimulus has been high prices, so that a drop in market value would close some of the mines. Russia certainly possesses deposits of wolfram. South America, Spain, and some other countries favourable to Germany may be expected to ship to her wolfram ore at prices considerably below the present abnormally high level

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The communique from Simla, announcing that the Government of India had no intention of relaxing their present measure of control over the export of Burma rice before the next crop comes to market was, according to advices from Rangoon, received with consternation in the local Rice market, and this, coupled with a strong rumour to the effect that Government within the next fortnight are going to commandeer at control rates all paddy and rice stocks, has caused almost a panic, so that stockholders who hitherto have been demanding Rs. 600 to Rs 1,000 above control rates per 100 tons have now reduced their terms to Rs 300 bonus, but even this has failed to produce buyers. The greatest consternation is said to be felt by those who have large stocks of both paddy and rice but are

not among the licensed shippers. It is stated that the stock in Rangoon alone is equivalent to 600,000 bags of rice.

Messrs Tata, Sons, Limited, state that it has come to their knowledge that applications are being canvassed for subscriptions to the capital of all sorts of new joint stock companies supposed to be projected by their firm in connection with the Tata Iron and Steel Company and the Tata Industrial Bank. The firm state that so far as they are aware no companies, except the two companies mentioned below, are in contemplation and they strongly deprecate the circulation of such false information to the public. The joint stock companies above referred to are the Nilla Mulla Power Company, (the prospectus of which will be shortly issued when a license from Government is obtained), and the Koyna Valley Power Supply Company, the formation of which cannot in any case take place before the end of next year. As regards the latter Company only the Hydro-Electric portion will be taken by Tata, Sons Limited, and the manufacture of aluminium and other products will be taken up by other allied companies.

The Burma Chamber of Commerce, writing to the Local Government on the representation of commerce in the Legislative Council on the proposed Craddock scheme, point out that only two persons out of one hundred are uneducated in comparison with the much higher percentages in Bombay, Madras and Bengal. They ask for six seats in all, three to be elected and three nominated. In the course of the letter, objection is taken to the electorate for Anglo-Indian and Europeans which they assert will prove satisfactory to neither party. They do not regard as serious a suggestion by the Local Government that some of the so offered seats might be filled by the representatives of commerce and consider that reliance on the nomination of non-officials is too speculative. As commerce would have no say in the actual appointments in view of the Southborough Report, they consider the proposal of two representatives of commerce altogether inadequate. They appeal to the Lieutenant-Governor to recognise this by increasing the commercial representation (including the Trades Association) to six.

The Madras Government has issued a press *communiqué* on the measures taken to relieve distress in the affected areas of this Presidency. The *communiqué* states that famine relief operations were found necessary in the Ganjam and Krishna Districts. In Ganjam there was a serious famine covering an area about a thousand square miles. Nearly ninety thousand persons were receiving gratuitous relief on the 28th June. The expenditure on famine relief which was over half a lakh in February and March, rose to Rs 93,883 in April, in May to five lakhs, in June to over five lakhs and in July to six and a half lakhs. The original provision in the Budget for 1919-20 was one lakh. When the nature and extent of the operations in Ganjam became evident this provision was increased to two lakhs. In May, 1919, it was again increased to five lakhs. A further increase to fifteen lakhs was found necessary, and the Government are now considering the necessity for increasing the Budget provision to 35 lakhs. The rainfall due to the south-west monsoon has hitherto been satisfactory so far Ganjam is concerned, and it is hoped that if the rains continue to be normal famine operations will be unnecessary after October.

The following letter from the Director of Industries, Bengal, has been circulated among the various firms in Calcutta likely to be interested in the project.—It is proposed to hold a British Industries Fair under the auspices of the Board of Trade, London, in the spring of 1920. The Fair will be held at three different centres, London, Glasgow and Birmingham. It will be open to all manufacturers and traders within the British Empire. The Exhibition is essentially a Trades Fair, and only members of trades will be admitted to it. It will not be open to the general public. The people who will attend, therefore, will be those interested and those who wish to place orders. It has been considered that this will present an excellent opportunity for traders in this country to bring their articles before the British dealers, and for this reason every assistance will be given to manufacturers and merchants in this country who wish to exhibit their wares at this Exhibition. Full particulars can be

obtained on application to the Director of Industries, Bengal. According to the rules of the Fair any manufacturer or merchant within the British Empire is at liberty to apply for a stall on payment of certain fees, but it has been proposed by the Indian Munitions Board that a stall for the Exhibition of Indian Village Industries products might be run. The arrangement for exhibits of Bengal products in this stall will be made by the Director of Industries, Bengal.

A slight departure from the usual run of Indian enterprises comes in the form of fertilisers, Limited. The company has secured from the lessors, Messrs A. B. Dungenan, Ltd, the lease of the property at Budge-Budge known as the Calcutta Bone Mills, for a period of three years, from April 1919 to April 1922, with the option of purchase at the end of that period, also the benefits of the contract with Messrs H. Hollingshurst, Ltd, the well known phosphate people for the supply of the entire production of the mill. The lease comprises the mill buildings, fully equipped with machinery and bone crushing plant, also a railway siding and use of the canal bordering the property. All the outturn for the next three years has been sold to Messrs H. Hollingshurst, Ltd, in terms of the above contract, at profitable rates. The capacity of the plant is 40 tons per day, which will assure the shareholders of a good prospect generally. The lessors receive rupees one lakh in shares by way of consideration for

the lease and nothing in cash leaving two lakhs of the total capital of three lakhs for issue to the public in 20,000 shares of Rs 10 each, which have already been subscribed. The working capital will be devoted to the purchase of raw products throughout India for manufacture. The Company has the advantage of taking over a going concern. The first Directors of the Company are Messrs A. E. Mitchell, A. B. Dungenan and R. P. Starling.

Messrs Haji Mahomed Haji Ismail & Co who own the Elphinstone Mills, situated opposite the Elphinstone Road Station, Bombay, have turned it into a joint stock company with a capital of fifty lakhs of rupees divided into 25,000 ordinary shares of Rs 10 each and 25,000 preference shares of Rs 100 each. All the preference shares and five lakhs worth of ordinary shares have been taken up by the previous owners of the company and the rest of the shares have been oversubscribed and the allotment work has been completed. The Managing Agents are Messrs Haji Mahomed Haji Ismail & Co, consisting of Mr Haji Yusuf Haji Ismail, Umar Sobani and Oosman Sobani. The board of directors consists of Haji Yusuf Haji Ismail, Esq, (Chairman), Messrs A. J. Raymond, Ambalal Sarabhai, Manu Subedar, Husein A. Lalji Tricunddas, S. F. Mulla and Umar Sobani. The offices of the company are situated at 375, Hornby Road.

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THE following trade enquiries have been received by the Director-General of Commercial Intelligence. Replies should be sent to the Publisher "Commerce and Industries", 5, Mount Road, Post Box 353, Madras, who will arrange to collect any information required.

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(1-101)—A firm in Lucknow (United Provinces) wishes to be put in touch with manufacturers of gunnies and hessians desiring to have representatives in Northern India.

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(1-102)—A firm in Cocanada (Madras

Presidency) wishes to be put in touch with buyers of Palmyra Jaggery.

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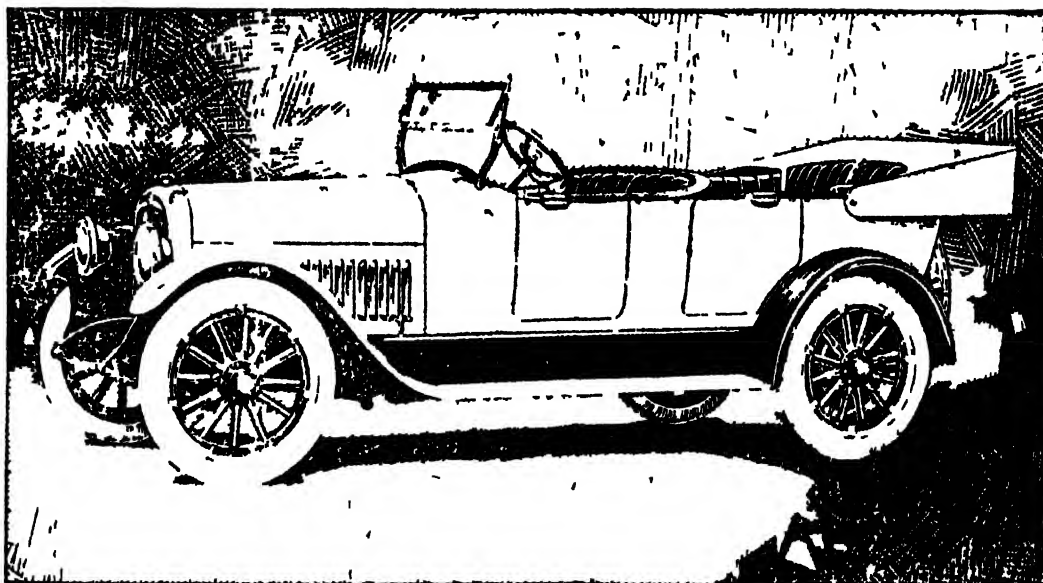
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COMMENTS OF THE MONTH.

THE month abroad was not characterised by any event of a striking character from a political or military point of view, except it be the altered outlook in the Russian situation, but there were many minor events of sufficient importance to be recorded in these pages. In Britain, the outstanding question early in the month was the effect of the relaxation of import restrictions which permitted German as well as other goods relating to many an industry to be imported into it. The relaxation was due in most part to the clamour of the consuming public, led by the Liberal and the Labour Press at the increasing cost of living owing to the restrictions on imports which they alleged were intended to benefit the British Capitalist-producers. It made the British Industrialists nervous and they set up the cry that the Government's action would ruin them. Many an infant industry of a great variety, believing that the Government would continue to support them, had sprung into existence, and the withdrawal of the protection vouchsafed to them in war-time, when their growth was encouraged, constituted, in their opinion, a barefaced betrayal of their interests by Government. *The Times* espoused the cause of these industries and devotes great attention to this question. Sir Auckland Geddes recently took great pains to explain that the Government's fiscal policy would have no serious depressing effect on newly established British industries. Should, however, there be any serious adverse effect on them, Government, he said, would at once take steps to remedy them.

Sir Auckland seized the opportunity to point out that the fears of cut-throat competition entertained of America, Germany and Japan were absolutely groundless. Germany had been stricken down too hard and too low to raise her head again for another generation. Her wherewithal to purchase raw materials and equip new machinery was insignificant, and what there was of it practically stood pledged to redeem her huge debt to the Allies. With her man power crippled and her productive capacity impaired by the colossal sums her industries would have to pay by way of war and after war taxation, she would, he said, be too absolutely helpless to be able to beat down her competitors by resort to her peace time trick of peaceful penetration. What applies to Germany applies to other European countries as well, only it applies with great emphasis as we have pointed out before, for, while Germany escaped the consequences of a foreign military occupation, France and some other European countries suffered terribly from them.

Sir Auckland's assurance about the position of British industries should not, however, be taken to mean that the economic position of Britain is as satisfactory as we might wish it to be. London, as the financial hub of the world, has suffered a great blow on account of the war. Before the war, Britain's excess of imports over exports amounted to, we believe, something about a hundred and fifty millions sterling, but this did not lead to any undesirable drain on her, for, she had to her credit, as a set off against this, her income from shipping

EDITORIALS.

The Administration of Baroda.

THE Report on the administration of Baroda for 1917-18, a copy of which we have been favoured with, is, we note, a record of steady, though, for the present, necessarily slow progress. Now that the war is over however, we may take it that the great programme of development work which, among other things, His Highness is known to have before himself involving great improvement in railway extensions, harbour convenience, the generation and utilisation of electric power and industrial activity—will be taken up as a systematic working plan. For the present, however, we have to rest content with a brief account of the directions in which the year under review has witnessed developments in the various spheres of the States economic activity.

AGRICULTURAL IMPROVEMENT

In Baroda, as in India generally, the main activity of the people is agriculture. The State is helping this activity in numerous ways. It maintains a relatively large expert staff at a recurring cost of about Rs 60,000 annually together with four model farms under the management of the Department. In the demonstration area of these farms, different dry and irrigated crops are grown and the best methods of tillage and crop treatment are demonstrated to the visiting cultivators. Seed selection, manual trials, varietal trials and other work known to up-to-date experimental farms are also conducted there. One noteworthy fact in regard to one of these farms is that it was able to dispense with an oil-engine which it used, along with two bullocks, for irrigation work. By a rearrangement of field work, the farm was able to utilise the bullock to turn out the whole irrigation work which saved the farm over Rs 700 by way of irrigation expense. We are glad to note that "the exact conditions under which the use of an oil-engine on a farm would prove profitable on the whole has been taken up for detailed study." The result of the year's working was that instead of an annual loss of Rs 1,000, the farm referred to showed a profit of Rs 200.

One point which is most prominent in regard to the work of the Agricultural Department in Baroda is that there the educative work appears to be far better arranged for than in other parts of the country. There are in the State four graduate agricultural inspectors, one for each district, and their visit in the year to 143 villages demonstrating to the cultivators the use of improved implements and lecturing on agricultural improvements and on the advantages of co-operation is bound to bear rich fruit in due time. The State did more. It appointed a temporary *Khedut* (fieldman) for pushing on the cultivation of irrigated crops in certain villages. "Through this man," we are told, "the department has succeeded in planting in these villages over 30,000 plantain trees, 700 of guavas, 160 of mangoes and 100 coconut palms and in introducing the cultivation of some country vegetables."

From this fact, the department drew its lesson. "Under proper guidance, an intelligent and trained cultivator serves as the best medium for introducing improvements." The lesson is not lost upon it for, we note that, finding that the interest of the cultivators in sugar-cane cultivation has been kindled, it has already proposed to employ two trained sugar-cane fieldmen in areas under cane cultivation. The wisdom of employing such men will be better realised if it is known that the agricultural school had to be closed for paucity of students. Since Muhammed refused to go to the mountain, the Durbar determined that the mountain should go to him, and they are rewarded. As a result of district propaganda, the cultivation of ground-nut, ginger, turmeric, cane, tobacco, hemp, pepper, *javu*, etc., in the Amreli district and of ginger, garlic and sugarcane in the Kadi district was further extended.

INDUSTRIAL DEVELOPMENT.

What with the uncertainties consequent on the war, it is unreasonable to expect anything remarkable by way of industrial development in the year under report. But the endeavours of the Durbar in this direction must be

recorded as showing the prospects of an industrial revival in the near future. We note a Committee has been appointed to enquire into the economic condition of the people and report on the measures to be adopted for further development of the resources of the State. For the rest, we are told "The question of the manufacture of woollen goods, the investigation of our forest resources and wood distillation and similar industrial problems have been taken up for enquiry. The year continued to be favourable for the existing industries which worked generally with profit. Some of the factories that have not been hitherto working or have been in liquidation were in the process of re-organisation." Development of sugar factories, tile works, fisheries and mines also received attention and is progressing. Government financed infant industries to the extent of Rs. 2,55,000 and they also contemplate removing by legislation of 10 tons octroi duties levied by local bodies which impede the growth of industries by reserving the right of levying such duties to themselves and compensating these bodies in special cases. We congratulate the Durbar on their far-sighted policy and hope that they will ere long be able to show even more substantial results than they have shown in the past.

The Industrial Boom

The Industrial boom in India continues, if anything, with increased strength. A hundred and thirteen floatations were registered in September last with an aggregate authorised capital of Rs. 48,98,34,000 as against only twenty companies with an authorised capital of Rs. 88,10,000 in the same period last year. We have pointed out more than once the dangers of rushing head-long into ill-considered ventures.

It is, however, easy to exaggerate the dangers that the Indian industrial movement is now subject to, especially in view of the fact that in the pre-war past there was little or no industrial activity comparable at all to that which we are now witnessing. Circumstances have now considerably altered. We have had to import capital in the past and we depended unreservedly on the London money market for

all our development programme such as the construction of railways and the cutting open of canals. To raise more than five crores or so on the best of securities—those of Government—was considered impossible in India even in the most prosperous of pre-war years. In war-time we have raised, not five crores annually, but fifty crores or thereabouts in the country itself.

And no wonder. The profits of our staple industries were more than sufficient for the purpose. Our jute industry in war-time fetched, we believe, about £50,000,000 odd by way of profits. Its earning capacity is not less now, the current jute profits approximating to about £10,000,000 or thereabouts per annum. Giffitt's monopoly is still unshaken and she is able to make the most of her position. The state of our cotton industry is equally cheering. At any rate, in war-time, it had its share of general industrial prosperity. Mr. J. A. Wadia calculates that the profits of this industry totalled 8 crores last year which is a substantial improvement on those of the previous year. Millowners doubtless complain of the rise in exchange as affecting their position, but, whatever the effect of this may be two circumstances, at any rate, are in their favour—the handicap on Manchester by way of increased manufacturing cost due to rise in wages and the anti-Japanese campaign in China which eliminates Japanese competition against us in Chinese markets. These factors apart—indeed they do not matter much so far as our point is to explain the industrial boom as partly due to abundance of capital—our cotton industry has in the last four years made very handsome profits. And they look forward confidently to an even more prosperous period, counting on certain favourable circumstances.

The case of our other staple industries was, generally speaking, no less satisfactory. The leather industry—including in that term all industrial activities based on hides and skins and our tanneries which sprung in large numbers in all parts of the country stimulated by the war-time demand—the tea industry, and our other industries connected with oil-seeds and similar economic products—all these had a good time. We must not forget to mention the case of our iron and steel industry which, led by Messrs. Tata, had a glorious period, nor

THE CASHEW TREE

By Mr. M. M. Peria.

The Cashew, as its Malayalam name implies, is an exotic tree originally introduced by the Portuguese. It was imported from South America, and seems to affect an insular climate in the land of its adoption. It grows extensively in the maritime districts of India and Burma, where it thrives on the sea coast and dwindles away towards the interior. It is particularly evident on the West Coast, and is a member of the minor botanical family to which the mango belongs. Semi-wild by nature, it grows on any soil in a tropical climate with mother earth as its only nurse, but is by no means hardy or long lived. Indeed a cashew plantation needs to be constantly renewed in order to have its outturn and appearance maintained.

The commercial value of the tree consists in the kidney-shaped nut which its fruit carries at the lower end of it. The fruit itself finds no remunerative sale in the market, and has gone to waste season after season ever since the Abkiri law was enacted. The villagers in South Kanara used to distil from the ripe fruit a spirit which possessed valuable diuretic properties and which was administered with marvellous results in the advanced stages of cholera. If the native of the West Coast has resented a penal legislation, it is the Act that has deprived him of a home distilled liquor by which he is still prepared to swear. The cashew fruit is juicy, and resembles the pear in colour and shape, but lacks its luscious taste. It is none the less wholesome, and, if one may not live long on a cashew as on the apple, one may yet live healthy.

The roasted kernels of the cashew nuts were largely exported to Europe and America in the years that immediately preceded the war. As many as three firms were engaged in the trade in Mangalore alone, the principal seat of the industry on the West Coast, and handled in a season nearly 2,000 tons of the product. The kernels were cured by the exporters concerned before they were shipped to the foreign market. The local demand has always been too insignificant to sustain the trade. The kernels were dried in the sun, peeled and garbled before

they were packed in dealwood boxes lined with cardboard. For a journey across the Atlantic, the cases were lined with tin. The great conflict of nations, which dislocated industries and paralysed trade, dealt the young cashew trade a knock-out blow, from the effects of which it has not yet recovered. The cashew industry as stated above, depended entirely upon foreign demand, and, when that failed, it died but a natural death. The edible nut, has, however, earned for itself a firm place in the affections of the grocer and confectioner, as will be explained below, and it is certain that the demand for it will be restored on the return of normal conditions to the export and import market. The short-lived impetus, which the trade received before the war, led, it may be mentioned, to the multiplication of plantations, the produce of which has since been disposed of in the local market at by no means profitable rates. Land suitable for cashew cultivation is still available in square miles and it behoves its owner to plant it with a tree which needs no great initial outlay and the returns of which are certain.

As regards the commercial value of the nuts, the earliest use of them was the preparation of an essence with which the Madonna wine was flavoured. Modern science and the inventive faculty of the present day confectioner have found for it many a new use. In short the nut has usurped the place of almonds and like costlier ingredients in cake and pastry. The oil expressed from the kernels is clarified and disguised to pass for salad oil and the residue or oil cake left is used to enrich confectionery. The kernels which have a bland pleasant taste are not without dietetic value, but are decidedly inferior to walnuts for instance which they resemble in taste.

The pericarp of the nuts also contain a heavy acid oil, the medicinal value of which remains to be discovered. It is at present used as a lubricant and also as a vesicant. The tree besides exudes an astringent gum of a very inferior quality compared to gum arabic.

OUR PAPER INDUSTRY.

By -Rao Sahib G N Sahasrabudhe.

I HAVE been studying for the last 20 years the problem of industrial development in India and I have been convinced that the question of industrial development must be kept in view and attempts ought to be made to advance the problem as far as possible. The Government Forest Department which was established by Lord Dalhousie, in 1856 has been working and, lately, since the establishment of the Research Institute at Dehra Dun, under the regime of Lord Curzon, the Department has been engaged in carrying out researches and conducting experiments of a varied character on raw-materials in which the Himalayas and other mountain regions in India abound. Some of the experiments have been proved successful and my object is to draw the attention of the people of the country to what is being done by the Department and to bring them in close touch with the work of the Forest Research Officers, with a view that the raw materials and sources of the country might be exploited systematically with the co-operation of the Government, and manufactures established in the country. Many forest industries could be started in India. "Paper and Paper-pulp industry" is one such.

I will deal with "paper industry" in Europe and America and review the situation briefly.

WORLD'S PAPER DEMAND

It is unnecessary to tell what an important part the paper and paper-pulp industry is playing in the markets of the world. Demand for paper is continuously increasing so much so that the world at the present time consumes as much as 8 million tons of paper annually. The growth of paper trade since the last 50 years is remarkable and Europe which had been the largest consumer understood the situation well and naturally began to put the paper and paper-industry on a broad and substantial footing and she has succeeded in her venture. Formerly, when the demand for paper was very limited, rags, waste paper, etc., were the only leading staple of European

paper-makers. But "necessity is the mother of invention". When rags and other materials began to fall short of the demand, naturally the paper maker began to look around for some other materials useful for him.

Then came the use of esparto, wood and other fibrous materials. The continually growing demand for paper resulted in the remarkable expansion of wood-pulp industry in Europe and wood has now been adopted as a substitute for rags, though for cheap grades of paper only.

POSITION OF SWEDEN AND THE WEST

Sweden had developed her paper industry so enormously that she holds at present a most conspicuous position and is aptly called "the home of paper-pulp industry". The latest official statistics for 1913 reveal the same thing. According to them, 11,86,577 tons of mechanical and chemical wood-pulp valued 1260,00,000 kroners were produced, out of which 8,17,537 tons were exported to foreign countries, Great Britain being the chief consumer. The following detailed table of mills is taken from the Swedish Board of Trade publications.

	Mills	No of Men
(1) Wood-pulp mills combined with pulp-board factories	13	700
(2) Wood-pulp mill only	114	11,185
(3) Wood-pulp mills combined with paper factories	30	7,500
(4) Wood-pulp mills combined with straw board factories and paper mills	11	3,205

Out of these, 33 mills manufacture mechanical pulp only. From the above, we shall have a good idea as to the enormous trade carried on by Sweden in paper-pulp industry, and I have especially alluded to it as I want to bring home to the mind of the public what a country endowed with natural resources can

do, if it wills for its own welfare. Practically speaking, Europe, and America have advanced the paper industry to its present state as will be quite clear from the fact that these countries together supply nearly 80 per cent of the world's paper demand.

It is now an admitted fact that Europe and America have steadily placed the paper-pulp industry on a sound footing. The advanced scientific knowledge, and other favourable circumstances, as the result of better economic position, have largely contributed to its marvelously rapid growth. Sweden and Norway, which have enormous forests of pulp wood, are the centres of the trade, while Germany, Austria, Russia in Europe and Southern and Western States in America, and the Dominion of Canada—all these have developed the pulp-industry as far as their forests would permit.

THE THEORY OF EXHAUSTION

Yet it must be borne in mind that the "success" signalizes danger ahead, because a fear is rightly entertained that the present drain on forests would, after some years, result in the exhaustion of the resources. Here, I cannot but refer to the weighty remarks of a well-known expert. He says "I have, I may say, travelled a great deal in the pulp producing countries, particularly, Sweden, Norway, Finland, United States, Canada, visiting the most up-to-date mills where all classes of wood pulp are made and I have had excellent opportunities of studying and comparing the various processes now in use in Sweden and Norway from which we have for years derived our principal supply of wood-pulp for paper. Years of practical experience have taught the Scandinavians to produce the best wood-pulp in both varieties. But to me, it seems, however, that at the rate at which the forests are being denuded of their timber, for other purposes besides the conversion into wood-pulp, in less than 25 years the maintenance of the timber would become a grave problem." Another writer speaks of this danger in a similar strain. He says "No doubt in Canada and the remoter regions of Northern Europe and Siberia, there are still vast timber areas as practically

untapped, but the Government of these countries, warned by what has occurred in the United States, are fully alive to the dangers of permitting wholesale clearances and are introducing checks and restrictions which in conjunction with the greater distances of these areas from the centres of consumption must have, and already has had, a serious effect upon the expansion of the industry. No better proof of this can be had than in the fact that the continuously downward trend of prices, of both paper and paper-pulp, reached its bottom limit about five years ago and while it is probable that, for many years to come, wood pulp will hold its place as the leading staple, yet it is now recognized that it will be unable to overtake the continuous growth of consumption, and to provide for this, a new source of supply must be found.

From these remarks, it is quite clear that although both Europe and America are doing their level best to develop paper-pulp and paper trade to the fullest possible extent, yet there shall be limit to this development beyond which they need never aspire to go because of the limited supply of materials at their disposal.

PAPER SUPPLY AND EDUCATION

The world of to-day is hypnotized by education and its "Ideals." Education has rightly been held as one of the highest ideals that a nation ought to keep before it and this ideal is attained through religion, philosophy, literature, science, etc., which are already making vast and fast strides with the spread of education, with diffusion of literature, philosophy, science, etc., the demand for paper would be on the increase and increase for ever and it is quite probable that the demand would be, some day, so enormous that Europe and America with the limited supply of raw materials at their disposal, would find it well nigh difficult to cope with it.

Scarcity of paper mean indirectly a check on the spread of education. If we look at the problem from this view point we at once begin to realize the importance of paper and paper-pulp industry in the markets of the world, and how with the enormous supply of raw materials that we have at our disposal could we perchance take the top in this branch of trade.

PULP AND PAPER CONSUMPTION OF THE WORLD.

Mr. G. B. Snellam of Helsingfors has tabulated the World's Annual Consumption of Paper and Pulp as follows —

Cellulose Pulp	Mechanical Pulp	Paper	Carr'd Board
Tons	Tons	Tons	Tons
Belgium -	31 500	1 000	132 850
Germany	571 281	679 530	1350 720
Great Britain			866 160
Finland	66 107	116 686	94 743
France	52 300	61 200	604 981
Japan	12 000	15 000	98 000
Italy	6 500	50 250	231 670
Canada	208 300	480 400	256 900
Holland	11 500		81 250
Norway	276 030	327 050	121 100
Austria Hungary	261 512	237 259	361 915
Russia	109 000	20 350	23 250
Sweden	536 070	230 750	235 200
Switzerland	18 900	17 050	45 750
Spain	2 400	4 400	74 820
United States	1 163 364	1 255 020	2 903 792
Other Countries of Europe	10 100	8 740	48 540
Other Countries of Asia			11 000
Other Countries of America	5 400	2 000	62 300
Africa			2 5000
Australia			13 700
TOTAL	3 343 168	3 531 675	7 846 191

After having given a brief history of the paper conditions in Europe, I now turn to India

THE INDUSTRY IN INDIA

There is no denying the fact that very few efforts were made by us in India, to put the paper industry on a large and substantial basis, and this will be clear from the fact that we have only 8 mills working. All these mills manufacture paper side by side with paper-pulp and this is a peculiar circumstance in India. In Europe and America, these two, paper and paper-pulp manufacture, form two separate industries. The largest Paper Mill in India belongs to Titaghur Paper Mills Co., Limited, who have two mills running, one at Titaghur and the other at Kankinara, the combined outturn of these mills is over 1,500 tons of paper per annum. The next most important paper mill is at Raneeganj with an annual outturn of 6,700 tons of paper. This mill is owned by the Bengal Paper Mill Co., Ltd. The third largest mill is situated at Lucknow with an outturn of over 2,500 tons of paper every year. In Bombay Presidency we have got two mills, one at Bombay and the other near Poona, owned by the Deccan Paper Mills Co., Limited. One more mill there is and that is at Gwalior.

Year	Value of paper produced by Indian Mills	Value of imported paper into country
	£	£
1908	505,818	628,335
1909	527,463	666,835
1910	513,436	738,722
1911	533,632	774,128
1912	513,730	905,560

The combined outturn of Indian mills comes to about 30,000 tons of paper per annum. The imports of paper into India in 1914-15 amounted to 51,390 tons valued £879,298. Hence, the total demand for paper in India comes to nearly 80,000 tons per year, of which India supplies only about one-third. From the above table, it is quite clear that year by year we have taken a fancy, as it were, to consume paper more and more, while the paper industry in India stands practically where it was ten years ago. Though mills have increased their rate of production owing to war conditions, yet the general outlook is not hopeful. As for the imports of paper-pulp and other paper making materials, the matter stands thus

IMPORTS OF PAPER MATERIALS

Imports into India in 1913-14

From United Kingdom	lbs 11,233
„ Austria-Hungary	lbs 24,501
„ Sweden	lbs 20,636
„ Germany	lbs 20,217

The above figures are sufficient to testify to our complete dependence on foreign markets. The gravity of the situation calls our earnest consideration and efforts ought to be made to improve the situation. A large proportion of chemicals is also imported into India such as soda compounds, bleaching powder, china clay, etc., which are mostly obtained from England. However, since the close of war, the situation of the paper industry is improving. Messrs Titaghur Papermills have increased their output and the mills now manufacture paper from bamboo and have erected new plant and machinery for the purpose. Messrs Turner, Morrison & Co., have seen 7 years lease of Kanara forests and will make paper from bamboos growing in the forests. The Hon. Mr. Lalubhai Samaldas of Bombay has established paper mills in Burma another and place. The success of these enterprises will be watched with interest.

SOAP INDUSTRY IN INDIA.

By—Mr V. K. Soman.

IS the industry possible in India, is the question that has occurred to many. The answer must be given in the affirmative. The soap has become an article of every day use. Even the villagers cannot do without washing soap. In highly civilised countries the consumption of soap has been looked upon as the criterion of the degree of civilisation. The supply of soap was one of the problems with the Germans in the war. In European countries the soap is looked upon as one of the life necessities. The growing imports of soap into India and the (increasing number) of soap factories in India clearly prove the existence of a field for soap. This growing demand and the changed condition of the world have set many a brain to make this industry an Indian industry.

RISE OF INDIAN FACTORIES

The Government of Madras amongst all other provincial Governments was the first to undertake the investigation of this industry departmentally and officially. The results of all this labour have proved immensely successful and the Government has started a pretty Model Factory at Calicut with up-to-date plant and machinery under an Indian expert specially trained in England. The results are most encouraging. The Government report of the factory and its working is full of promise. It is reported that the Government is going in for a still bigger plant and is thinking of making the present factory into a technical institution for oils and fats with a view to train Indian youths in the industries connected with oils and fats. The Mysore Government, as well as the Nizam's Government very lately, have opened soap factories under England-trained Indian Soap Experts with up-to-date plant. The products of these two factories are commanding very good sale and are approved by the public. All this goes to prove that the industry can be successfully conducted under expert and sound management. There are other private big companies in Bengal, Bombay, U P etc, that are doing sound and extensive business. The want for soap was not so keenly felt even during the war times, even though there were no appreciable and regular imports of foreign soaps, as the local supply met the demand.

MARKETS AND MANUFACTURE

The Japanese soap imports increased during this time. From the figures of foreign soap imports, it can be clearly seen that there is a very vast field for Indian enterprise and capital. The consumption of soap is increasing day by day. The field is so vast for the industry that if well organized and up-to-date factories were started in every district there will never arise the question of consumption of the finished product. From all this, it can be clearly seen that there are immense possibilities for the soap industry in India, if conducted upon up-to-date and sound economic lines.

To make it a complete success the market must be regularly supplied with the best finished products of uniform quality. Then comes the question of the supply of ingredients that are required in soap manufacture. Fats, oils, alkalis, colours and perfumes are the chief articles required. It is no exaggeration to call India the land of oil-seeds. India exports oil-seeds valued at nearly 30 crores of rupees. All this export means serious economic loss to India as the seeds are exported as raw materials and not as finished products. By exporting these articles in their crude forms, we lose the by-products. Moreover, we have to import these very articles in their finished form at exorbitantly high prices. Thus, it means a double drain. Almost all oils are used in soap manufacture in varying degrees according to their respective properties.

OUR SUPPLY OF OIL

There are certain oils as coconut, the tallow, castor, mahua, etc., which are most valuable in soap manufacture. Even the supply of these oils and their seeds is available in immense quantities. There are still further unexplored sources of oil supply which deserve scientific investigation. If properly investigated, the oil industry will be revolutionised. Our present proceeds of oil extraction are crude and antiquated. There is immense scope for improvement. If properly and scientifically organised on most up-to-date lines, the oil industry of India has got immense future possibilities. When the oil industry

is so organised, the soap industry must, as a necessary consequence, take firm root in India and be a sure success. At present, there are no oil mills in India that conduct the work of the separation of fatty acids and glycerine. The supply of pure fatty acids will prove of immense help to small manufacturers working on cottage industry lines. It will save them the cost of a big plant required for the recovery of glycerine liberated in the settled boiling process of soap manufacture. Moreover, it will save an immense amount of labour and time required for such recovery and boiling. With fatty acids (pure) readily available, the whole operation of soap manufacture can be finished without boil. The resulting soaps from such fatty acids will stand competition with the best imported ones as they will never sweat in rain and will never lose in size and beauty.

SOME PROCESSES

To make the soap industry really an Indian industry, serious, systematic and scientific attempts must be made to organise the oil industry. There are three processes to my knowledge by which glycerine is separated from the fatty acids: one is auto-glime, the other twitchell and the third called the enzyme. Every process has its particular advantages. To my mind, the twitchell process is the easiest as far as the glycerine and fatty acid separation is concerned. The resulting fatty acids are said to be dark in colour. But in the new process, I hear vast improvements are made. About enzyme I know not much. It is for the manufacturers to settle what would suit them best. I have simply given the outline. Apart from their use in soap, they are commercially useful in many an industry. There is only one factory at Baltimore.

FATS AND ALKALIES

Then comes the question of fats. The recent statistics of hide exports clearly prove that a very heavy number of cattle are slaughtered in India. The Indian methods of the recovery of fat are not as scientific, up-to-date, sound and economical as European ones. By such crude methods, a very big per cent. of available fat is lost. Moreover, the fat is not as pure as it ought to be. All

this must be improved. With better and improved methods the supply will be greatly increased. This supply will be of immense use in soap as the fats are not generally used in India for edible purposes.

ALKALIES

Next comes the question of the supply of alkalies which can be called the life of soap. For the present, there is not a single factory that prepares caustic soda and soda ash in India even though the salt and the supplies of crude alkaline earth are immense. They say there is a European factory at Budge-Budge near Calcutta where caustic soda and ash are prepared. I know nothing about the quality of their articles. The demand for these articles is so immense that even such 20 factories will not be able to meet it. These articles are of immense use in other industries as well. Every attempt must be made to manufacture these in India. Our helplessness was proved in the last war when the prices rose to 6 times the ordinary prices. There are 3 processes—one Le-Blanc, the other Ammonia and the third Electrolytic one. In America they are preparing their soda by electricity. We in India too have got electricity and by the new Hydro-electric schemes, the power will be available at a very cheap rate. Attempts must be made in this direction. It is reported that the Tata's have a scheme before them. If successful, they will lay Indian chemical industries under a deep debt of obligation.

SODA SILICATE SUPPLY.

Soda-silicate is manufactured in India in some glass factories. It will be available locally with increased and regular demand. For ash, caustic soda and silicate, we must for the present hopelessly depend upon foreign supplies. Then come colours. There are special soap colours available. They are of German make. In the time of war, attempts were being made to introduce vegetable colours. Some colours can be most successfully used. Some such attempts were made even in the Research Institute at Bangalore for the Government Soap Factory at Calicut. But now, as ready and special soap colours are available they will be used as they do not require much labour. For their supply we must depend upon foreigners.

PERFUMES

There are two sorts of perfumes one natural and the other synthetic. As for natural perfumes we can manage to get ample supplies. But this industry is as disorganised as are other industries. With better equipment, up-to-date, scientific and labour-saving plant we can hope to establish it on sounder economic lines. As for synthetic perfumes we must depend upon foreign supplies. The use of these in soap is becoming more general day by day.

ALCOHOL AND OTHER RIQUETTES

The supply of cheap commercial alcohol is a necessity. Alcohol is required for transparent soaps. At present the commercial alcohol is exported into India even though there are so many Government distilleries. The present prices of alcohol are prohibitive and there is no possibility in the near future for this branch of industry to successfully compete with the imported articles as long as there is not sufficient cheap local supply. Without a sure and steady local supply it is impossible to conduct this on a commercial scale. The Government must give a rebate of duty on all alcohol used for commercial purposes and must issue licences to *bona fide* manufacturers for redistilling the same on easy terms. Without

redistillation this industry will not be paying

In cheap soaps rosin has become an article of necessity and up till now we had to depend upon foreign imported rosin for our supply. But the Government turpentine distillery at Bhowali has removed this difficulty to some extent.

The products of this distillery are best suited for soap purposes as far as I know. The products of this factory have been approved on the continent. The Government report shows most hopeful signs for this industry machinery—Machines and plants required, for an ordinary soap factory can be prepared locally in the workshops. The Government factories at Calicut and Bangalore get their own plant and machines (as kettles, tanks, stamping presses and tablet machines) prepared in their own workshops. For a milling and glycerine plant we must approach foreign expert makers. In some cases, it is more desirable and paying to import certain special type of machinery than to get it locally prepared. I hear that the Mysore and Nizam's Governments have ordered out special and up-to-date soap plants. Almost all of the present soap factories in Bombay and other places are equipped with local machinery.

These are some of the problems connected with soap manufacture.

The Soul of Business.

THE SOUL OF BUSINESS

That quality is the soul of business is a maxim which we might well take to heart. That is a lesson which has been well learnt by the British businessman. Note this from the "Textile Mercury": "It is impossible to deny that margins are good but the profit is not so large as would appear on the surface. We know of firms that have fixed their basis for the particular quality of cotton they require right up to the end of the year. They run a certain risk in doing so, but their marks are so well known that they must of necessity make adequate provision. It is all to the good of the trade that there are firms

who absolutely rely on quality. They believe in consistency, and over a period of years this policy pays. It may be dear or it may be cheap, but it is just the same quality whatever the price. These are the firms who get a good clientele and can keep them. In good times they may sacrifice something, but in bad times their customers stick to them. This is true both of cloth and yarn. We have cloth marks on the China and Indian markets that have been established for many decades. Even after the disturbance and disorganisation caused by the war and the competition that has been experienced from native and Indian mills the same cloths are coming into renewed request. So much for goodwill."

INDUSTRIAL DEMOCRACY AND LABOUR.

By—Mr. S. Kabboor, M.A., F.F.A.A., F.C.I.

THERE is a growing feeling among employers that working conditions in industrial undertakings must be improved. There may be some who have, for many years, at least cared scrupulously for the well-being of their workers. But only within the last two or three years has this movement on the part of employers reached any considerable proportions in India. On the part of many, it is doubtless the expression of fear—fear of public opinion, fear of organized labour, fear of legislation. On the part of most, however, it is doubtless the *bona fide* expression of interest in the well-being of their workers and a genuine desire to improve conditions.

We have, it is true, a nominal legislation enforcing certain minimum conditions as to labour, but legislation is after all conditioned by that unsocial barrier, practicability. The law is not what it should be, is not what the experts know is best, it is a compromise between what is best and what inferior employers desire. It is a compromise effected by untechnical and often times insincere law makers. Legislation, therefore, has to bring recalcitrant employers up to a minimum level set by law.

THE EMPLOYER AND EMPLOYEE

One of our most serious problems grows out of the fact that the cost of living is increasing beyond the earning power of the masses. Manifestations of discontent are breaking out everywhere. Strikes are becoming too frequent while we remain almost entirely unprepared. To-day, the average employer, in a large shop or factory, does not know his employees either by name or by face. He has no personal dealings with them whatever, and the sympathy and understanding between them, as man and man, have passed away entirely. The same thing takes place when the small factory develops into a big one. When the employer is no longer able to go into the shop and to recognise his men individually, mutual sympathy between employer and employee ceases to exist and one great element of efficiency is lost. This gap between employer and employee has been greatly widened by the growing unfriendliness of trades unions and labour unions and

by the socialistic propaganda of class consciousness. We have reached a state to-day, in the relations of employee and employer, whose simple friendliness, if not sometimes strengthened, may be well nigh impossible.

ARBITRATION BOARDS

Therefore, there should be competent, disinterested men and women of standing in every community willing to devote their lives to the study of this serious human problem. To these experts, employers and employees would turn with confidence to obtain a peaceful adjustment of differences, if such a simple mechanism as the Canadian Act were operative in India. Working men frequently strike because they know of no better way to attempt to secure justice. Why should we not provide for a better way?

Particularly in the case of employees in concerns connected with public utilities (like Tramways) the opportunity to obtain just conditions without resort to strikes should be established. All that both sides in any controversy should, and usually do, desire is fair-play. A device like the Lemieux Act assumes this. In no strike does our public receive sufficient impartial testimony upon which to base judgment as to the rights of the controversy. At least, in cases where public utilities are affected, the people are certainly entitled to full, unprejudiced information, the Lemieux Act provides for this. What is urgently needed to-day is a re-examination of our laws bearing upon the relation of employer and employee and a careful and discriminating scrutiny of various plans which are being tried by some of our States and in other countries.

DEMOCRACY AND DISSENT

The evidences of the growth of democracy in the field of industry are many. Perhaps, the strongest and most important is the development of the organization of labour. Nowhere has the spirit of democracy been so crude, because it has mistaken the idea of equality for that of democracy.

THE STATE AND INDUSTRIES.

By—Historicus.

IT would have been strange if the war had not given an impetus to socialistic methods, but it will be a misreading of history to regard this impetus as a warrant for an era of socialistic legislation. During a time of unprecedented national stress, the State becomes almost the only reality and supercedes most of our individual and private rights. The State alone exists, the individual is merged in the State when the nation is face to face with a critical ordeal. The emergency is such that the entire productive and industrial power of every unit in the State is converted into a source of nutrition for the State instead of being a source of profit to an individual or group of individuals. The State controls all, assimilates all and uses all. That is the theory of a State in war.

THE STATE IN WAR AND PEACE

But to proceed to deduce from this that after the return to normal times, the state of socialism that was necessary during the war should by legislation be prolonged or that the State should take upon itself productive and industrial responsibilities superseding civic agencies is like arguing that what was necessary for our abnormal condition will be good for normal conditions also. Nobody would deny that the responsibilities of the State are bound to be on the increase. Medical aid, housing, education, old age relief, healthy recreation—in fact, scores of things will receive increasingly greater attention from those who carry on the government. This has been specially the case in England and we dare say all parties are united in making life more worth living after the war. But this does not mean that the State is going to supersede the private producer, manufacturer, grower, and organizer and take upon itself directly the function of industrial activity in a material sense.

PROFIT AND POVERTY

No business will be worth running unless there is profit to make in it. And if the socialist politician should step in and ask why should not the State "nationalise" the business and the profit alike, the answer is it

will mean a most ruinous innovation. Those who advocate the innovation do so on the ground that that will banish poverty. How and in what way has been scarcely explained. If the annexation of profits to the State that would have otherwise gone to the capitalists can make any change in the general condition of poverty, it is only in the direction of depriving the capitalist of a source of investment in his own country. Perhaps, the workers may claim that a portion of the capitalist's profits should be used for raising their wages. But that does not mean that the poor man will cease to exist. It may make some rich men less rich and some poor men a little better off, but the question of poverty and inequality will remain the same. And capital, at least an appreciable part of it, must gradually be driven out of the country.

PROPOSED STATE SOCIALISM

We know that the Labour Party in the House of Commons hugs this delusion to its bosom, namely, the delusion of making the State take the place of the capitalist. The State will become a big bureau of employment and will be run by the employees themselves. We can imagine the inevitable in less than thirty months. A fierce rivalry between industries and their special advocates will be the immediate result, leaving the general population at the mercy of these advocates who will be engaged in a perpetual warfare on behalf of their particular pet industries.

CONCLUSION

Now, as society is organised, Government look after the peace, progress and prosperity of the community in general, leaving the society to be a self-acting and self-adjusting mechanism. But under the socialist regime, there will be first a disorganisation of industries, shrinkage of capital in the country, inefficiency in the control of matters of primary and vital importance to the State—in fact, a period of all round downfall. The vast bulk of all political parties cannot, however, fail to join their forces against such a contingency becoming probable.

WATER POWER RESOURCES OF INDIA.

By—Rao Sahib G N Sahasrabudhe.

AMONGST the various powers that move the machines, so much necessary for the industrial development of the country, water power is much talked of lately in the whole world, including England and India. Every nation is trying to see the potentialities of water power resources and in England a Committee, "The British Water Power Committee," has been appointed first to reconnoitre and examine the potentialities of water power resources in the Empire.

The outbreak of the war rapidly brought matters to ahead, all the world over, for it was soon found that power was at the root of all war demands and that electricity was the most adaptable form of power. It was found that Switzerland and the United States had utilized only 21 per cent of their available resources and Germany no less than 13 per cent.

ENQUIRY IN INDIA

In India the formation of the Indian Munitions Board was the first step in co-ordinating existing industries for war purposes and this was soon followed by the appointment of the Indian Industrial Commission. In Chapter VI of the Report of the Industrial Commission the question of power is discussed in all its bearings and the necessity for a Hydrographic Survey of India is emphasised in paragraph 99. The Hydro-electric power schemes in Mysore initiated by the Mysore Government and the Hydro-electric works in the Deccan Ghats and the Koyena projects installed by the energetic Firm of Messrs. Tata and Sons of Bombay were already in evidence which have conclusively shown the potentialities of the water power installation as a great industrial power on the largest scale possible.

THE BARLOW REPORT

His Excellency Lord Chelmsford the Viceroy of India was naturally impressed with these large schemes and has ordered the carrying out of the Hydrographic Survey of India as recommended by the Indian Industrial Commission and appointed a Committee consisting of two officers—(1) Mr G T Barlow, the Chief Engineer, Irrigation Branch, United

Provinces, associating with him in the enquiry (2) Mr G W Moires, M.I.E.E., Electrical Adviser to the Government of India. The Committee made a tour in the whole of India and have issued a preliminary report on the water power resources of India.

The Report is excellent though not exhaustive and I believe the defects will be possibly removed in the Final Report that may be submitted later on.

The Report discloses that there exists extensive potentialities of water power resources in the country and it rests with the Government of India to take the initiative in the matter and create this cheap power so as to be available for use by the small as well as the big industrialists of the country as desired in the Holland Commission's Report.

THE WORLD'S PRESENT POWER DEMAND

The British Water Power Committee states that it is impossible to estimate with any pretensions to accuracy—the power now being used in the various countries of the world. Independent estimates based on such data as are available tend, however, to show that it is of the order of 120 millions horse power made up approximately as follows:

(1) World's factories including electric lighting and street Railways	75 Millions horse power
(2) World's Railways	21 Do
(3) World's shipping	24 Do

Total 120

This includes all steam, gas and water power.

The Report says—for a full discussion of new industries which may arise in India, if cheap electric power is available—the Report of the Industrial Commission may be referred to. The Industrial Handbook, 1919, issued by the Indian Munitions Board also merits close study. Among these industries may be mentioned the electric smelting of iron ores and the electric production of steel and its alloys.

electric welding now extensively employed, the production of aluminium from alumina, prepared from the local bauxite deposits, the manufacture of calcium carbide, the direct fixation of atmospheric nitrogen into the nitrates of commerce, electrolytic production of chlorine gas and the preparation of phosphorus and of abrasives like carborundum. All these processes are in actual use in various parts of the world where the raw material and power are found. In some cases, the process is electro-chemical, in others electro-thermal but in all cheap power and large scale production are essential to success.

The British Water Power Committee's Report further says about what has been done and what in future may be done in some of these matters —

Electro-metallurgy and electro-chemistry have rendered it possible to handle materials not workable by any other means, have made

available new materials and have greatly cheapened the production of many other materials of wide use. Aluminium, calcium carbide, chromium cyanide, silicon, carborundum are products rendered commercially possible only by electrical processes, while alkalies, hypo-chlorite, phosphorus, magnesium and sodium nitrate are produced most economically by such processes. Great developments have recently taken place in the production of electrolytic copper and zinc and in processes for the electric smelting and refining of metallic ores.

All these processes demand relatively large amount of energy. The world's production of calcium carbide for example was 140,000 tons in 1913 requiring 100,000 continuous electric horse power for its production while the energy used at the end of 1915 for electric furnaces in the United States alone was approximately 300,000 electric horse power.

FRUIT INDUSTRY IN THE NILGIRIS.

We are glad to note from a Publicity Bureau Circular that the local Government are going to make an earnest effort to develop fruit culture in the Nilgiris. The United States of America are making huge profits out of its fruit industry and we do not see why our country also should not utilise suitable lands such as those that are available in the Nilgiri Plateau for the cultivation of fruits. We are sure that if the industry is developed on proper lines, a profitable export trade in it can be established. People in the plains complain of the difficulty of obtaining apples, oranges, and other fruits and what little we get from Bangalore have now to be purchased at such high prices that many who used to go in for these have had to give them up. The Government's decision to make available to the Agricultural Department the services of the Curator of the Government Gardens and Parks on the Nilgiris for making experiments in this line is thus to be welcomed. The details of the arrangement are given in the Publicity Bureau note.

"It has been" says the Note decided to transfer to the Director of Agriculture the control of the Government Gardens and Parks on the Nilgiris with effect from the 1st April 1920. "The Curator of the Gardens" it continues, "will from the date be a member of the Agricultural Department and will continue in charge of all the items of work for which he is at present responsible. But he will be relieved of many of his routine duties by the strengthening of his staff of subordinates. He will thus be able to devote more attention to improving the cultivation of the potato on the Nilgiris and to studying the possibilities of fruit culture on the Nilgiri Plateau." The Note concludes "The importance of the Nilgiri potato is already generally admitted and it will be remembered that Government recently approved Sir Frederic Nicholson's proposals for the establishment of a jam and pickle factory at Coonoor. There is therefore special reason for giving assistance to the growing of fruit on these hills."

INDIAN STATES.

Water Power in Travancore and Cochin.

ONE of the biggest problems that is forcing itself for a speedy solution is in connection with the importance and necessity of tapping the enormous water sources of India for the purpose of generating power. If we go into the literature that has gathered round this important subject for the last five years from professional men, we would be able to realize that water power will be one of the most potent, if not the chief factor that will contribute to India's future industrial development. For the sake of brevity, we will confine our attention to some of the authorities in India who have expressed their views on the need of water power and the existence of the vast resources for its successful production. One of them is Mr. Alfred Dickinson. He is the well-known Engineer who planned and carried out the construction of the dams to supply Bombay with electricity. In the course of an address delivered lately he remarked that steam power was being gradually replaced by water power, and that the cheapness of the latter and the facility with which it could be produced would, in the long run, eliminate the former.

THE WESTERN GHATS

An enterprising Indian firm that took the initiative in this direction is that of Messrs. Tata and Sons. A scheme is being matured by this company for the construction of a dam across the valley in the Western Ghats. It is estimated, that by harnessing the water, about 80,000 horse power could be provided every hour throughout the year. One of the Engineers who is responsible for the works in connection with the Tata Hydro-Electric Works from the beginning says that "We can produce enormous quantities of water power which will be capable of increasing the food supply, ensuring the growth of materials for industrial products, providing the fertilizers and the light, reducing the possibilities of famine and making the population to be less dependent upon agriculture and the eccentricities of the season." Professor H. Stanley Jevons of Allahabad is another authority who recently suggested a scheme for utilizing the waters

of the Ganges. A third is the Water Power Committee recently appointed by the Board of Scientific Inventions to investigate the question of utilising water power chiefly in the British Empire. According to the report of this Committee the potential power of the whole Empire amounts to at least fifty to seventy million horse-power. It is capable of immediate economic development, provided that it is carried out under the direction of competent experts.

THE PERIAR PROJECT

Coming nearer home we have the Periyar Water Scheme, is one of the largest water resources in India. It was constructed with the object of mitigating the thirsty plains of the Madurai District. At first there was some difficulty in getting the sanction of the Travancore Government, as they were unwilling to part with a portion of their territory through which flows one of the greatest rivers with a number of smaller streams running westward into the sea. The advantage which the North Travancore ryots enjoyed for the irrigation of their lands was immense. With a view to retain its utility and to extend it as far as possible, the Travancore Government designed a project on a modest scale for the distribution of water to a limited area. But the Durbar were induced to yield to the wishes of the Madurai Government with the result that the latter succeeded in completing one of the largest water works in India under the direction of Colonel John Pennycuik of the Royal Engineers during the Governorship of Lords Curzon and Wenlock at the cost of over Rs. 10 lakhs. The water from the river passes through a tunnel of 16½ by 7 ft. The volume of water flows at the rate of 70 by 2 ft. per second. It irrigates thousands of square miles of land. Now the question is whether this enormous quantity of water could be utilized in generating electricity. A scheme was once projected for this purpose, but it failed as the idea was not so prominent then as it is now. One of the experts who seems to have studied the question closely is of opinion that electricity

could be generated by utilizing the water power of the Periyar channel which goes into absolute waste now

ITS EXTENT

The outlet of the Periyar lake, which is about 21 miles long at Thekkadi, and is fed by seven rivers. The total area of catchment is nearly 232,801 square miles. The Periyar dam is situated about fourteen miles from the head of the lake and seven miles from Thekkadi. The dam, which is 1,200 ft. in length, 178 ft. in height with a width of 85 ft. at the base and 12 ft. at the top, is built across a valley connecting two hills. When the lake is full, which is usually about the beginning of December, nearly 152 ft. of water is registered at the dam. As it sinks to 132 ft., the head-slucce is closed and the distribution of water stopped. At this time there will be about 30 ft. of water available from a lake of 21 miles long. When the water rises above 152 ft. the sluice is opened and the water allowed to escape into the sea through Travancore.

TWO BIRDS AT A STROKE

It may perhaps be contended that since the dam has been constructed for irrigation purposes how could the water be utilized for the generation of power. No doubt, as an irrigation scheme, it has proved a success, as its benefits are distributed over 130,000 acres of land of which 40,000 grows two crops yearly and sometimes three, instead of one before the construction of the dam. But the opinion is held that if a scheme is worked out under expert advice the Periyar river could be made to serve a double purpose—that of irrigation and water power for industrial development.

As we have shown, a large quantity of water goes into waste at a certain period of the year. The water thus wasted could also be utilized in generating electricity, and the District of Madura which is now watered by the Periyar river could be equally benefited by a water power scheme. The value of the Periyar river is great as an economic asset, and since the problem of increasing water power in India is engaging the earnest attention of the authorities, the Periyar river, as the greatest reservoir in India, affords every facility for a practical solution. The adoption of a scheme such as the one we have briefly outlined will not militate against the main functions of the Periyar Irrigation Scheme. The usefulness of both could be equally balanced with the result that one of the most important Districts in the Presidency could be converted into a centre of industrial activity.

THE COCHIN SCHEME

While on this subject we are reminded of the Chulacudy Water Scheme projected during the Dewanship of Mr. Bhoré. The Cochin Durbar was assured by expert engineers that the project would be a successful one. Now that Messrs. Tata and Sons, the pioneers in this connection, are raising up their huge Oil Mills at Ernakulam, there is every prospect of the Cochin Scheme being brought within the range of their speculation. Chulacudy river is one of the largest streams in the State, and if a scheme is successfully worked out to generate water power, it will be of immense help for the development of industries, the necessity and importance of which is being fully recognized by the Cochin Durbar.—*The Malabar Herald*

INTERNATIONAL TRADE CONFERENCE.

We note from our American contemporary, "Exporters Review," that an International Trade Conference was to have been held at Atlantic City during the week commencing September 29, under the auspices of the United States Chamber of Commerce which extended an invitation to Great Britain, France, Italy and Belgium for a joint commercial mission to visit America for the purpose of acquainting American business men with the situation abroad, explaining European economic difficulties

and suggesting the best method of co-operation with the view of bringing about closer relations between the United States and the European countries with which she was associated in the war. The invitation was promptly accepted, and Elliot H. Goodwin, General Secretary of the Chamber and Ben H. Lambe, Associate Editor of "The Nation's Business" have gone to Europe to complete final arrangements for the organisation of the joint mission, and its trip across the Atlantic.

TOPICS OF THE TIMES.

AGRICULTURE.

The Sugar Committee.

The following are from a resolution of the Government of India, dated Simla, the 2nd October 1919 —

Among the many questions which have been brought into prominence by the war that of the possibility of organising and developing the Sugar Industry in India stands high in importance.

THE POSITION IN INDIA

Regarding the desirability of such expansion there can be no doubt. The food value of sugar is high, the annual consumption has been increasing steadily for many years, and in India no less than elsewhere. Sugar-cane is indigenous in India which until very recent years stood first of all countries in the world in its area under cane and its estimated yield of cane-sugar, and even now ranks second only to Cuba. Yet it is notorious that the yield both of cane and raw sugar per acre and the percentage of available sugar extracted from the cane are undesirably low. While, therefore, India should be in a position, as she was in the past, to produce a surplus of sugar for export, she has in fact had to supplement her own supplies by imports the tendency of which steadily to increase has only been checked by war conditions. The same conditions have also served to emphasize the disadvantages involved in relying upon external sources of supply. The world prices of sugar have risen enormously, with the result that, while imports between 1913-14 and 1917-18 fell in quantity from 900,000 to 500,000 tons approximately, they rose slightly in value from 14.96 to 15.32 crore. The beet sugar industry has been disorganised over extensive areas in Europe and, if India cannot now look to herself to supply her own wants, she is faced with the alternative of either reducing her consumption of sugar, or paying increased amount to obtain it.

NEED FOR A COMMITTEE

But if the desirability of extending the sugar industry in this country is obvious, the difficulties involved are hardly less so. Apart from the difficulties attending the cultivation and manufacture of cane-sugar in all countries, the Indian Industry is confronted with problems

which are either peculiar to India or exist there in a special degree. The systems of land tenure exhibit great variety and are complicated by the customary laws of inheritance and joint ownership. Again, the bulk of sugar produced in India is consumed in its crude state as *gur* or *jaggery*, and this fact has an essential bearing on the prospects of a successful venture for the production of factory sugar in any particular locality. There are indications that the incentive of present prices of sugar is attracting considerable attention to India as a further source of supply, and that necessary capital and business enterprise would be forthcoming if the whole question both in its agricultural and manufacturing aspects were thoroughly investigated, and the conditions essential to the establishment of an organised industry authoritatively defined. The Government of India are, therefore, of opinion that the time is opportune for the appointment of a representative Committee to investigate the problem in all its bearings and to advise whether a definite and co-ordinated line of policy can be laid down for the promotion of further development. They have accordingly, with the approval of His Majesty's Secretary of State, decided to appoint a Committee for this purpose during the coming cold weather, under the presidency of Mr. J. M. McKenna, C. I. E., I. C. S., Agricultural Adviser to the Government of India, and with the following terms of reference —

TERMS OF REFERENCE

(1) To examine the various sugar-cane growing tracts of India with a view to determining the nature of the expansion possible in such tracts either by the development of a factory industry or by improvements in the existing indigenous methods, (2) to examine the possibility of consolidating the areas under cane and of the extent to which this is limited by the existing systems of land tenure, (3) to report on the work already done by the Sugar Expert with regard to the breeding and selection of improved varieties of cane and to make suggestions as to the extent and direction in which this work can be further expanded, (4) to examine the present methods of co-ordinating

work on sugar-cane adopted by the Agricultural Departments working in the various provinces and the efficiency of agricultural practice in vogue in India or recommended by the Agricultural Department, (5) to examine the existing sugar factory industry in India and to advise in what localities and under what conditions a factory industry can be successfully established, (6) to examine the economic and labour conditions now prevalent in the various districts where expansion of the sugar industry is likely and the question of improving railway facilities and other means of transport which may be required with a view to furthering the spread of the industry, (7) to investigate the work that is being done in the introduction of improved small power plants and small power factories, (8) to review the position of India with regard to the world's sugar supply and to formulate recommendations for the improvement of that position, (9) to investigate the conditions under which refined and raw sugar and molasses are imported into India, (10) to examine the effects of controlling such imports by a duty and, where necessary, giving this duty so as to give preference to sugar grown in British dependencies, and (11) to examine the present conditions governing the manufacture of rum under license from Government and the question of distributing such Government contracts.

CONCLUSION

The Committee is expected to assemble on October 26th. The Government of India are not yet in a position to announce the names of all those who will serve as members of the Committee, but its composition and personnel, in so far as these have already been decided, will be as follows —

(1) Mr J MacKenna, C I E, I C S, Agricultural Adviser to the Government of India, *President* (2) A member of the Indian Civil Service as Vice-President (to be nominated later), (3) The Hon'ble Mr. Lalubhai Samaldas, C I E, Bombay, (4) Sir Frank Carter, Kt, C I E, C B E, of Messrs Turner Morrison, Company, Calcutta, (5) Sudar Jogendra Singh, Punjab, (6) Mr J W Macdonald of Messrs Henry Tata & Sons, Ltd, Sugar Refiners, (7) and (8) two other experts to be obtained from England (will be

announced later), (9) Mr Wynne Sayer of the Indian Agricultural Service. In addition to the above the Committee will co-opt Mr. A B. Shakespear, C I E., of Messrs Begg Sutherland and Company, Cawnpore, as a member for the period of its tour in the United Provinces, and it is proposed similarly to co-opt a representative of the industry in Southern India. Mr A E Gilhat, I C S, will act as Secretary to the Committee.

* * *

Land in Agricultural Economy.

Professor W Somerville, President of the Agricultural section of the British Association, recently delivered an important paper on the part played by grass land, as compared with tillage, in the national economy. During the war, the effect of compulsory and voluntary ploughing has been to contract the area under pasture. Thus, whereas in 1914 the total area in Great Britain under temporary and permanent grass (hay and pasture) was some 21½ million acres, it was barely 19½ million acres in 1918, the area under cultivation having correspondingly increased. In Ireland the area under grass was 1.2½ millions, so that the United Kingdom at present comprised about 30½ millions acres of permanent and temporary grass and 15½ million acres of land under crops other than grass and clover. This was over and above some 16 million acres of mountain land used for grazing. Professor W Somerville allows that in respect of nutritive output and the utilisation of labour and in its effect on foreign exchange, arable cultivation is far more attractive than pastoral farming, and he goes on to plead for the retention for tillage of at least all that the plough has gained during the war. The tendency at present, he goes on to say, is the other way and under the stimulus of high wages and increased costs generally, a certain amount of land has already been re-sown with grass and preparations are being made for similarly dealing with an increasing area next spring.

NEEDED IMPROVEMENTS.

Professor W Somerville goes on to show that although a considerable proportion of the grass land in the United Kingdom is high quality, it by no means follows that there is nothing more to be done to improve them. On the other hand, grazing practice shows that the

productive capacity of these pastures is maintained by judicious stocking during the growing season, by the regular mowing of thistles and other coarse weeds, by the maintenance of drains, by the spreading of the droppings of cattle, by the avoidance of winter grazing and in many cases by the consumption of a certain amount of cake. The remaining part of Professor W. Somerville's paper deals in a technical manner with the qualities of a permanent pasture and the relative nutritive values of the more important pasture plants and the feeding value of fattening and non-fattening grasses. Incidentally, he touches upon the problem of the improvement of third rate and inferior classes of pasture lands, of which the aggregate area is enormous.

THE PASTURE PROBLEM

Most of the poor grass land of the country, he continued, is associated with the heavier classes of soil and has been abandoned to grass on account of the high costs of cultivation, including, in many cases, the necessity of drainage. It is, for arable purposes, essentially wheat land, with in occasional crop of beans, and the regular intervention at comparatively short intervals of a bare fallow. Other areas of poor pasture, smaller in aggregate extent than the clays, but still of much importance, are to be found on all the geological formations of the country. Of the 14½ million acres of permanent grass in England and Wales, 70 per cent is under pasture and only 30 per cent under hay, and of the poorer classes of grass land it is certain that the proportion that is grazed is still greater. It is evident therefore that the improvement of pasture is relatively a more urgent matter than the improvement of meadows though with over 1½ million acres of permanent grass made into hay in England and Wales during 1918, the latter problem is also one of enormous importance.

MANURIAL EXPERIMENTS

The most famous experiments on the effects of manure on permanent hay are those started in 1856 by Lawes and Gilbert on the Meadow at Rothamsted, and continued ever since on the lines originally laid down. The results have thrown a flood of light on the principles of manuring, which has been of the greatest assistance in the elucidation of

problems in agricultural chemistry and soil physics. They have also shown unmistakably the effects of the more important elements of plant food on the yield of hay and on its botanical composition, but even supported as they were by elaborate chemical analysis of the produce, they leave us uncertain in regard to the feeding value of the herbage.

He has also much to say on the subject of the determination of the quantitative results attributable to the use of manures, singly and in combination, and the conclusion reached is that we are still in a state of much uncertainty in respect of the quality of the hay, that is to say, its effect on the animals consuming it. The experiments made so far show that the farmer's meadow lands have an attractive opportunity of judicious investment of capital on artificial manures and so improving the feeding value of the herbage.

GENERAL CONCLUSIONS

The conclusions at which Professor Somerville arrives are summarised below —

1 That the quality of a pasture is not primarily dependent on its botanical composition, though as a rule, the presence of white clover and other Leguminosae is generally indicative of high feeding value.

2 That poor pastures especially on clay soil, can be rapidly and profitably improved by the use of phosphates, especially basic slag.

3 That, as a rule, phosphates alone are necessary to effect and maintain the improvement, and that, of supplementary substances, potash and lime are occasionally worthy of attention.

4 That the improvement of poor pasture is very dependent on the presence of Leguminosae, and especially of white clover.

5 That renovating with the seed of wild white clover may, in the absence of natural Leguminosae, be a necessary preliminary, or concurrent operation.

6 That cake can rarely be used at a profit, and that, as an agent in improving poor pasture, it occupies an unsatisfactory position.

7 That nitrogen, whether in the form of artificial manure, or as cake residues, when added to phosphates for pasture, is always unnecessary and frequently detrimental.

8 That, in the case of hay on permanent grass land, equal weights of produce may have very different feeding values.

INDUSTRIES.

World's Toy Industry.

GERMANY'S COMPETITORS

IN the United Kingdom previous to 1914 the toy trade was scarcely developed. Clumsy wooden figures and lead soldiers, certainly of good quality, were being made, but the raw material came chiefly from Germany. Even in 1915, in order to supply the demand, it was necessary to have recourse to Japan to obtain the necessary Christmas-trees.

BRITISH ATTEMPTS

An attempt to support the toy industry by patriotic measures was also unsuccessful and had to be abandoned. However, in 1918, the exhibition opened by the Board of Trade proved that the manufacture of smooth toys and dolls' heads had taken a turn for the better—indeed, had developed to a very considerable extent. Movable glass eyes, which formerly came from Germany, are now made in the best qualities in England, and the output quite comes up to "Stieff's" highest productions, although the prices are high. Mechanical toys, such as railway trains, motor-cars, and vehicles of all descriptions, are being made, particularly since the Controller placed larger quantities of raw material at the disposal of manufacturers.

In the matter of earthen, china, and porcelain toys, such as tea and dinner services, it is essential to follow the English patterns, which are the only ones that sell in the Colonies. Former aeroplane factories are now turning out large quantities of toys.

FRANCE AND SPAIN

France also used to do a considerable export trade, and in 1913 its value amounted to £1,800,000. Very little of it, however, was her own make. Glass eyes and dolls' heads were of German origin. China services were made in Germany and repacked in France and sold as French goods.

Spain has only produced small quantities, and her former German imports were to some extent replaced by those from Allied countries. In 1913 her toy imports only amounted to about £20,000, and if, in 1917, they increased to £60,000 the increase was due to higher prices and not to quantities.

NORTHERN EUROPE

Scandinavian trade in toys, both in imports and exports, has developed very considerably. During the period 1913 to 1916 the former progressed from £50,000 to £70,000 and the latter from £6,000 to £14,000. The chief article exported was India rubber balls. The total Swiss manufactures amounted to £100,000 per annum, and consisted for the most part of wooden toys. In metal goods Switzerland was unable to compete with Germany. Swiss exports were comparatively insignificant and only reached £1,720 in 1917.

THE UNITED STATES

In 1913 the United States possessed 71 factories, producing toys to the value of £1,500,000. In 1918 the number of factories increased to 165, and the total value of manufactures reached £1,000,000, 65 per cent. of which was for account of the old firms.

The President of the Toy Union expressed the hope and intention of American toy-makers to become the world's greatest suppliers, and whilst it may be doubtful whether they will succeed, it is certain that if present America is flooding the markets with first-class articles at comparatively low prices. In 1914 the United States exported toys, chiefly to Canada, to the value of £60,000, and in 1917 the amount reached £360,000.

JAPAN

Japan was the greatest exporter of low-grade toys. In 1910 their value was £150,000, in 1913, £250,030, and in 1917, £830,000. The manufacture of toys in other countries is keeping pace with the demand, but the volume of business is smaller and scarcely affects the markets.—*The Times*.

Fancy Leather Goods Industry

Prior to the war, writes a correspondent to the *Times*, the Austrian manufacturers had quite the best reputation for fancy leathers and leather goods, their knowledge of dyeing far surpassing our own, and the light and artistic finish they were able to give to their small goods, such as purses, bags, and similar articles, enabled them to secure a large portion of the

British and foreign trade Their predominance has, however, been shattered, probably for good and all, provided we do not take matters too easily and permit them and the German section to overtake us

The great vogue of the lady's handbag has produced a bewildering variety of material, for not only is leather employed in its production, but, owing to the world shortage of the staple, other materials such as silks, brocades, and velvets, have had to be employed. Many of the high-grade bags are beautifully made, the leather—largely calf—being hand-embossed, with floral and scroll effects, with engraved frames in green, gold, or rose, and lined throughout with finest quality suede. These have the advantage of durability as well as of beauty of design and workmanship, but, of course, they command high prices, varying from £2 to £6 or more. Further, they are often expensively fitted with purse, mirror, card case, &c.

The art of decorating and beautifying leather has been extended by all sorts of means, scientific as well as hand methods being brought into the service whenever available. For instance, embossing and graining plates are made by a comparatively new electro process which assures perfect imitation of the 'grain' of the natural skins. The extreme prices ruling for calf, seal, goat, sheep, pig, lizard and alligator skins, which show no present sign of relaxing, make the use of imitations of these classes of leather increasingly imperative. Crust skivers (split sheep skins), one of the common sorts of fancy leathers, now command about four times the price they realized in 1913, goat leathers have appreciated to the same extent, making from 17s 6d. to 32s 6d. per lb. first hand in the public sales, and labour and all sorts of material have all advanced very heavily.

Fortunately, conditions of production, although difficult and costly, are on a better footing in England than anywhere at the present time, so that there is every reason to anticipate the maintenance of our own market, and, in addition, the possession of an important overseas section comprising our own trade and that wrested from our late enemy competitors.

Ground-nut Oil.

GROWTH OF NEW BRITISH INDUSTRY.

One of the most remarkable features of the development of the vegetable oil industry in Great Britain that has taken place during the last three or four years is the growth of our imports of ground nuts (or peanuts, as they are called in America), which have risen from about 11,000 tons in 1913 to over 135,000 tons last year. Before the war ground nuts were scarcely known to oilseed crushers in the United Kingdom, though they were one of the most important sources of oil used by the French oil manufacturers at Marseilles, who imported over 500,000 tons of "arachides," or ground-nuts, in 1913, says the *Times Trade Supplement*.

A feature of the world's trade in ground-nuts before the war was that although 150,000 tons were exported annually from countries of the British Empire, chiefly India, the Gambia and Nigeria, only a few thousand tons were shipped to the United Kingdom. But during the war oil manufacturers in Great Britain have taken up the crushing of ground-nuts on a large scale, and are thus making use of an Empire product, the value of which was formerly appreciated only by foreign countries.

Ground-nuts, or peanuts, are grown in the United States, the West Indies and South America, in West and East Africa, in India, Indo-China, the Dutch East Indies, China and Japan, and in many other parts of the world. The chief exporting countries are India, West Africa (the Gambia, French Senegal and Nigeria), and China.

USES OF GROUND-NUT OIL

The uses to which ground nut oil can be put are numerous and varied. The best qualities of cold pressed oil make excellent salad oil, it is used for cooking purposes, in the manufacture of margarine, and in canning sardines. The lower grades of oil are suitable for soap-making and are used in particular for Marseilles white soap. Roasted peanuts, as is well known, are a very popular article in America. In England during the last few years they have been extensively used in chocolate and other confectionery as a substitute for almonds. Experiments made in the United States have satisfactorily proved that ground-nut oil of

good quality can be eaten in the same quantities, and can be as thoroughly digested as those fats and oils at present most commonly used in the diet. Ground-nut oil, like olive oil, can be obtained by cold pressing and when thus made from sound, sweet nuts it need not be refined. Such cold-pressed oils are superior for salad purposes to oils that are not so pressed and afterwards refined.

In crushing ground-nuts on a large scale for oil a great deal of waste results from failure to remove dirt and other foreign matter before crushing, so that oil and cake are produced of a quality inferior to the products which might be obtained if care were taken to clean the nuts thoroughly and remove both shell and the red coating of the kernels before pressing. If blanched kernels are used, oil of the finest quality is obtained and the cake can be ground into meal and used for mixing with wheat and other starchy flours for making biscuits, bread, and cakes. The ground-nut, or peanut, being universally accepted as a good and wholesome nut to be eaten, it is rather surprising that so little attention has been given to the possibility of utilising ground-nut cake as human food. Thousands of tons of this cake are turned out by the factories which crush ground-nuts for their oil. If the improvements which have been indicated above were introduced in the method of oil expression a cake could be obtained which would conform to a definite standard of purity and be fit for human consumption.

EXPORTS FROM INDIA

India's export trade in ground-nuts has fallen from 277,000 tons in 1913-14, the year before the outbreak of war, to only 17,200 tons during the year ended March 31 last. This was largely due to lack of shipping. The trade may now be expected to revive rapidly.

It is generally understood that the best edible oil can only be obtained from ground-nuts imported in the shell and decorticated before pressing. Many of the ground-nuts exported from India are decorticated before shipment and reach Europe in poor condition, owing chiefly to faulty methods of shelling, which damage the kernels, and the ill-effects of the long voyage on damaged kernels. Shelled ground-nuts, however, from Nigeria

have reached Europe in good condition, and have been used for the production of edible oil of good quality.

* * *

Lac Cultivation in India

The lac industry has for many years formed the means of livelihood of thousands of the poorer classes of India, especially those inhabiting the outskirts of the forests and other areas where the lac insect abounds.

WHAT IS LAC?

Lac is a secretion produced by an insect which sucks the juice of plants and transforms it into resin. This secretion hardens on exposure to the air into a deep-red or orange-coloured substance, semi-transparent, and breaking with a crystalline fracture. The insect belongs to a group commonly known as scale insects.

At the time of emergence the young insect is about $\frac{1}{16}$ of an inch in length and deep-red in colour. After sluggishly wandering about and finding a suitable spot, it fixes itself and then thrusts its beak into the tissues of the stem and begins sucking the juice. The sap thus taken into the body is greatly transformed, and is given out uniformly through pores all over the body in the form of resin, which after a few days encases the insect completely. Female insects remain fixed once for all, but male insects emerge twice a year, sometimes as winged creatures.

The lac-bearing branches are cut off and placed on trees having a sufficient number of succulent branches. When the young insects have swarmed out, the old lac-bearing branches are removed and the resinous incrustation (stick-lac) is scraped off with a knife, ground in a mill, soaked in water, and washed. The pure animal resin (seed-lac) thus obtained is mixed with colophony and orpiment, cooked over a slow fire and drawn out into thin sheets, in which form it is commercially known as shellac.

THE POSITION IN INDIA.

The United States Vice-Consul in Calcutta calls attention to some interesting details furnished by Mr. C. S. Misra, first assistant to the Imperial Entomologist at the Agricultural Research Institute, Pusa, regarding the present condition of lac cultivation in the plains of

India During the last decade the industry has passed through many vicissitudes. Over-production, no doubt, contributed to a large extent to the lowering of prices of the crude material. Prices reached their lowest point about a year after the outbreak of the Great War—22 rupees per maund (about £2 per cwt)—at which figure lac cultivation is hardly worth while. New uses were then found for shellac, and its exportation was limited, after which prices rose. With the steadying of prices of shellac the flow of the crude material has again become about normal. One result of the stimulus afforded by present high prices is that many persons have started the cultivation of lac in localities where success is doubtful, because the climatic conditions—an important factor in the development and subsequent acclimatisation of the lac insect—are decidedly unfavourable. On the other hand, few new attempts at lac cultivation have been made in localities which at present meet practically three-fourths of the world demand.

INDIAN MONOPOLY

India is the only country in the world, says Mr. Misra, which supplies the market with shellac in its various manufactured forms. The Japanese have been trying to grow lac in Formosa, the Germans experimented with lac in Amani (German East Africa), and the Department of Agriculture in Egypt has also tried to introduce the industry there. The Indian Agricultural Research Institute furnished brood-lac for these three experiments, but definite information regarding their success or failure has not yet been received.

In years when the prices rise, as was the case from 1905 to 1907, and again during 1915 and 1916, attempts are made to oust the natural lac from the market with a synthetic product, but these attempts prove unsuccessful, as the constituents of the synthetic article either cannot be obtained in bulk or the cost of manufacturing it leaves too small a profit. However, it is reasonable to expect that the partiality at present shown by consumers for shellac, which even in its standard form is more or less adulterated with foreign ingredients, such as colophony and orpiment, will at some time give way to a preference for seed-lac, which is a pure animal product, and in which impurities can be easily detected.

TREATMENT OF CRUDE LAC

The Agricultural Research Institute at Pusa has conducted experiments in the treatment of pure lac by grinding stick-lac to standard size, soaking and washing in water, adding monohydrated sodium carbonate, then aerating, and frequently turning in the shade until thoroughly dehydrated. Samples of the product, which was a beautiful pale brown in colour and considerably superior to the seed-lac obtained without the addition of the alkali, were judged by a London firm to be twice the value of the untreated product.

It is pointed out by Mr. Misra that the supply of stick-lac can be increased by removing all the lac from the trees a fortnight before the swarming of the young insects takes place and putting it on trees already pruned for the purpose, and then not gathering the stick-lac until after the swarming occurs, instead of before, as has often been done. Prior to 1908, when lac dye was a marketable product of considerable importance, it paid to remove the stick-lac before swarming and when rich in colouring matter, but now, with the introduction and extensive use of aniline and other dyes, lac dye has sunk into insignificance. Experience has shown that stick-lac obtained from pruned trees is richer in resinous content than that obtained from unpruned trees, and that the successive broods reared on pruned trees are not so liable to disease. It is also a noteworthy fact that brood-lac should be obtained from a locality having similar climatic conditions to those obtaining in the place to which it is to be transported, and that brood-lac does best when transferred to a tree of the same species as the one from which it was taken.

TRADE IN LAC

The heaviest lac production is in the north-eastern section of the Indian Peninsula, in parts of the United Provinces, Central Provinces, and the Province of Bihar and Orissa. There is also an area in Eastern Burma, one in Western Sind, and a section of Central Assam, where quite large quantities of lac are collected, as well as smaller quantities in scattered sections.

The value of the shipments of lac (mostly shellac) from India in 1916-17 was £1,819,000, 78 per cent going to the United States, which has been the largest buyer of Indian lac for the last twenty years

* * * Cocoanut Industry in Ceylon.

OPENING FOR CAPITAL

The expansion of the cocoanut industry, particularly among European capitalists, will always be associated with the name of that acknowledged authority on cocoanuts, Mr Kelway Bamber (says *The Times of Ceylon*) Few have done as much as he to urge on a not over-credulous European public the relative advantages of cocoanuts as compared with tea and rubber. Thanks to him, European capital has been freely spent in the development of an industry hitherto the monopoly of native capital.

THE PAST

It was the keen eye of Mr Bamber that first foresaw the unlimited future possibilities of the cocoanut industry at a time when experts in England discovered a cure for removing the rancid taste from margarine which was the only obstacle to the new product competing successfully with butter. 1911-12 marked this period and it synchronises with the opening of all the young plantations in the Straits and in Ceylon. Local copra from this period onwards, with very slight fluctuations, was slowly but steadily rising, until the outbreak of the war, when the sales stood at over Rs. 100 a candy.

EFFECT OF THE WAR

With the commencement of the war this industry, like most others, was hard hit. Estates in bearing were just able to tide over the period 1914-1915 (the case of the Company that recently paid 4 per cent with copra selling at Rs. 52 is typical). But with regard to other Companies, almost all were young, earlier palms just coming into bearing. These fared worst. A profitable return at the earlier stages would have gone far to tide over financial difficulties.

EUROPEANS AND COCONUTS

Apart from financial loss this state of affairs has given birth to the erroneous impression, shared by Europeans themselves, that they are not able to compete in cocoanuts as successfully as native owners do. Native management may

result in a small saving on establishment charges and perhaps something on labour, but what do these amount to in the aggregate? Is it a matter for serious consideration? Are there not corresponding advantages, under better supervision and control to speak nothing of initiative. Given time and opportunity—he has had an abundance of the worst of bad luck—European owned estates will yet show as good or better results over others, as the working of the next two years will show.

WORST AT AN END

It is a relief to think that the worst is over. Large and increasing crops being assured, and with every probability of the market rising and remaining well over pre-war rates, hereafter, the prospects of cocoanut-owning companies are undoubtedly bright. Perhaps it may be here stated for the information of the uninitiated that cocoanuts take more than double the time tea and rubber take to give a return. Coconuts yield best after the 10th year.

What will copra touch? On the 14th July, copra has sold at Rs. 120 per candy as against Rs. 96 a fortnight ago. How high it will rise it is difficult to prophesy, but that it will rise much higher it is easy to foresee. Will the rise be temporary? The answer is, will the demand for copra and cocoanut oil continue or can Europe afford to dispense with these vegetable fats of proved utility and nutrition? Copra was selling at £60 a ton a month ago as against £34 to £40 controlled prices. It is quoted at £65 a ton and with freight available in increasing proportions and the demand greater than ever—the exchange being the only obstacle—the probabilities are that copra will continue to rise.

SUCCESS OF MARGARINE

When the success of margarine was assured in 1913, copra assumed an upward tendency and stood at over Rs. 100 a candy. If the war did not intervene what would copra be selling at now? Rs. 120 to Rs. 130 a candy, a fair guess. Once exchange is settled and business becomes normal (after a good deal of "soaring" to make up for the 4 war years' deficit) copra will once more revert to normal and remain at Rs. 120 to Rs. 130 a candy. The imports of cocoanuts to Great Britain rose from 98,583 cwt in 1907 to 858,192 cwt.

in 1911, an increase of 500 per cent in four years. We have also the knowledge that Great Britain alone wants 500 tons a day, whereas the actual supply is about 24 per cent of the requirements. What of France and whole of Europe?

A LUCRATIVE INVESTMENT

Lord Leverhulme says "I know of no field of tropical agriculture that is so promising to the present moment (1914) as cocoanut planting, and I do not think in the whole world there is a promise of so lucrative an investment of time and money as in this industry. The world is only just awakening to the value of cocoanut oil in the manufacture of artificial butter of the highest quality and of the bye-product copra cake as a cattle food." Says another authority "since the adoption of nut-fat in the manufacture of margarine most of the old and unreasonable prejudice (rancid taste) against it has disappeared and its consumption is rapidly increasing. In many districts it has a much larger sale than butter and its consumption is in no way confined to the poorer classes." To these statements has to be added another factor which is of recent growth—the longer purse at the disposal of labour, for necessities not within easy reach hitherto. With copra selling at £60 a ton in London it has been found possible to sell margarine at about half the cost of butter and with the assurance that margarine is the more wholesome diet for the human system, the position devolves itself into this—Can butter be produced in such immense quantities and be sold at a cheaper rate

as to supplant margarine (not taking into consideration for the moment the relative merits of the two commodities) or will margarine eventually be sold at a price equal to that of or higher than butter? In the latter alternative the higher price of margarine is bound to reflect on the markets for copra and cocoanut oil.

NEW USES

The substitution of cocoanut oil for dripping, and the wider field of copra as a cattle food still await development. Copra is now being exported at a loss of about 20 per cent exchange (high freight not being taken into consideration) so that the correct sale price is actually local rates plus loss on exchange. While a steady rise may reasonably be expected weekly, the high water mark for copra will only be reached when the exchange problem is settled.

OVERPRODUCTION

The only possible cause that can bring about a slump in the market is overproduction. On this account there need be no fear, for Great Britain alone wants 500 tons a day and this is what any one best Ceylon estates can produce in a year! Fears of overproduction may safely be put aside for generations to come. The above are facts worth pondering over. An intelligent public can make their own deductions and draw their own conclusion as to the price copra will sell during the next three years, and thereafter, and if their figures run on lines similar to the writer's, their calculations should read pleasantly.

MANUFACTURE OF GLUE.

We understand from the Publicity Bureau that the manufacture of glue which was in great demand for use in the construction of aeroplanes, was undertaken by Mr. K. C. Srinivasan, the Chemist of the Leather Trade School. Experimental work was carried on in the Presidency College Laboratory and eventually for the first time in India, glue of good quality was successfully manufactured. Further experiment is therefore still necessary to show whether the glue can be manufactured on a commercial scale at a profit. At this stage Messrs. Beardsell & Co. have come forward with an offer to undertake and to finance the experimental manufactures of glue in a factory. Mr. Davies, the Director of Industries, has accordingly recommended that the services of Mr. K. C. Srinivasan should be lent to the firm to assist in pioneering the industry. The Government have approved this proposal and the services of Mr. K. C. Srinivasan will accordingly be lent to Messrs. Beardsell & Co. for a period of one year, the firm paying Mr. Srinivasan's salary and also a contribution towards his leave allowances and pension. The site of the old oil press near the Leather Trade Institute which is not now used by the department will at the same time be leased for a year with some spare departmental plant for the purposes of the factory.

RESEARCH AND INVENTION.

Science for Industry.

AMERICAN LABOUR'S DEMAND FOR STATE AID.

ACCORDING to the American journal *Science*, the American Federation of Labour has issued an important manifesto on scientific research, and has sent copies of it to President Wilson, the President of the Senate, and the Speaker of the House of Representatives. The following is the text of the manifesto —

Whereas, scientific research and the technical application of the results of research form a fundamental basis upon which the development of our industries, manufacturing, agriculture, mining, and others must rest, and

Whereas, the productivity of industry is greatly increased by the technical application of the results of scientific research in physics, chemistry, biology and geology, in engineering and agriculture, and in the related sciences, and the health and well-being not only of the workers but of the whole population is well, are dependent upon advances in medicine and sanitation, so that the value of scientific advancement to the welfare of the nation is many times greater than the cost of the necessary research, and

Whereas, the increased productivity of industry resulting from scientific research is a most potent factor in the ever-increasing struggle of the workers to raise their standard of living, and the importance of this factor must steadily increase since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of re-adjustment, which limit can be raised only by research and the utilization of the results of research in industry, and

Whereas, there are numerous important and pressing problems of administration and regulation now faced by Federal, State and local Governments, the wise solution of which depends upon scientific and technical research, and

Whereas, the war has brought home to all the nations engaged in it the overwhelming importance of science and technology to national

welfare, whether in war or in peace, and not only is private initiative attempting to organize far-reaching research in these fields on a national scale, but in several countries governmental participation and support of such undertakings are already active, therefore be it

Resolved, by the American Federation of Labour, in convention assembled, that a broad programme of scientific and technical research is of major importance to the national welfare, and should be fostered in every way by the Federal Government, and that the activities of the Government itself in such research should be adequately and generously supported in order that the work may be greatly strengthened and extended

* * *

Australia's Valuable Achievements

It is only within the last 12 months that there has been any concerted move to associate scientific investigation with the conduct of Australian industries. The older generation fought shy of the scientist, the university professor, and the laboratory. But the prejudice is dying, and the enlistment of the very best brains is bringing reward, says the Sydney correspondent of the *Times*, to both primary and secondary industries. The following is a brief abstract of what has been accomplished and what is in progress —

For the first time in Australia it has been demonstrated that a good quality of paper can be made from trees of the eucalyptus family. Young kauri was used. A considerable number of Australian plants have been tested for their paper pulping qualities, the results in some cases being favourable.

Following on the work done on the subject of power alcohol and alcohol engines, a method has been discovered for starting these engines from cold.

Heavy losses having been incurred by a Western Australian potter through vitrified ware, local clays were tested and their use eventually recommended. They proved suitable, and this ware has been made in Perth from Australian clays.

Seger cones for determining kiln temperatures were formerly imported, chiefly from Germany and the United States. They are now being made out of Australian clay.

A mechanical cotton picker has been constructed embodying the results of initial laboratory tests, and suitable tractable varieties of cotton have been planted for a large-scale test.

A thorough investigation into the constitution and physical properties of Posidonia fibre has been completed. This is a necessary preliminary to developing the commercial utilization of the fibre.

Conferences have been held in each State, and the cordial support of engineers and representative men throughout the Commonwealth has been accorded to the institute's scheme for the development of engineering standardization.

A large amount of information as to measures taken in other countries for the scientific control of road construction and maintenance has been obtained, and a committee is preparing a scheme for initiating experimental work in Australia.

A fundamental investigation into the chemical constitution of "glass" resin has already resulted in the isolation of several

new substances not previously known as a constituent of resin.

Investigators in Tasmania have succeeded in manufacturing a new product from kelp. It turns perfectly in the lathe, takes a high polish, and is suitable for making insulators, buttons, and various other articles.

A process for getting rid of the objectionable colour in mangrove tanning has been worked out, and large-scale experiments are now being carried out to test the process on an industrial basis.

A new parasitic fly which destroys the pupæ of sheepflies has been discovered in Queensland. Its life history is being worked out, and specimens have been sent to the National Museum, Washington, United States of America, for determination.

Specimens of the water hyacinth or river weed have been analysed. The results show that the plant can be used as a source of potash.

Methods for obtaining potash salts from various Australian deposits of alunite have been worked out. If certain important developments now proposed take place, potash from alunite will be available as a fertilizer to be used in the manufacture of artificial manures in Australia.

COTTON SEED OIL.

In Britain the oil trade needs not less than 50,000 tons of cotton seed per month. Only 20,000 tons were imported in July. "It is probable that only from India can we hope to obtain enough cotton seed to place the oil trade in its old position. Little has yet been done to stimulate the import of cotton seed from India," says a contemporary.

We are waiting for the stimulant. Meantime we note that at Hull, the centre of the oil trade in Britain, the price of cotton seed oil is 98 shillings for crude Egyptian, and 96-90 shillings for crude Bombay. It would be interesting to know just why Bombay oil sells at a lower price than Egyptian, and to know if it is possible to improve the quality and raise the price.

BRITISH SOAP IN INDIA.

The British Soap Industry is one of the best organized in the world, and its products have a unique reputation. The Chamber of Commerce (London) Journal thinks that British trade with India has possibly reached its highest point and that a downward tendency may set in. The production of soap in India is on the increase. The West Coast is well favoured as regards the supply of suitable oils. In spite of the increased local

manufacture the Indian market is not expected to be of less value to the British soap exporter, because the use of the better qualities of soap is increasing. The Indian market for imported soap is still worth about three-quarters of a million pounds sterling annually, the bulk of which is supplied by the United Kingdom. The exports of toilet soaps from the United States to India last year were in the neighbourhood of £20,000 in value.

TRADE.

India's Trade in 1918-19.

A REPORT published in the month by the Department of Statistics, India, reviews the trade and the industrial position of this country. The Review points out that "from the trade view point the year ending 31st March 1919 was an *annus mirabilis*. In none of the previous forty-four Reviews was it necessary to chronicle so many events all crowded into the space of a twelvemonth. A silver crisis, a rise in exchange, a failure of the monsoon over wide areas, a virulent epidemic of influenza, responsible, it is estimated, for a death roll of six millions, and the armistice illustrations, if illustration were necessary, the unique diversity of the year."

EXPORTS

In spite of these exceptional difficulties the exports to the United Kingdom and other parts of the British Empire were valued at Rs. 132 crores (£88 millions) and to the Allies at Rs. 87 crores (£55 millions). Manufactured jute was the chief export of the year, reaching the record total of Rs. 52 crores (£35 millions) as against Rs. 20 crores (£13 millions) in the pre-war quinquennium. Tea was valued at Rs. 18 crores (£12 millions), the pre-war average being Rs. 13 crores (£9 millions), and tanned hides at Rs. 7 crores (£5 millions) as against Rs. 1½ crores (£1 million). The total value of food grains exported, however, decreased to Rs. 40 crores (£27 millions), from Rs. 46 crores (£31 millions), the pre-war average. Clearing House returns exceeded the high record of the previous year by no less than 55 per cent, and the total number of new Joint Stock Companies registered during the year also increased. Prices of securities and shares showed an increase in the case of Government securities, banks, coal companies and flour mills, and a decrease in jute and cotton mills.

IMPORTS

It is difficult to summarise briefly the more interesting features of India's trade during the year, which are dealt with in detail in the Review. In cotton piece-goods, India's chief import, white goods and coloured goods each decreased in quantity by no less than 48 per cent, while

grey goods owing to the large imports from Japan, decreased by only 7 per cent. There has been a remarkable increase in the imports of piece-goods from Japan since the outbreak of war. Her share in grey goods rose to 35.4 per cent from 2 per cent in the pre-war period, in white goods from *nil* to 37 per cent, and in coloured goods from 1 per cent to 91 per cent. Next to cotton piece-goods, sugar is India's largest import. The quantity imported was 8 per cent higher than in the preceding year. The total quantity of iron and steel imported showed an increase of 19 per cent over the preceding year, but the imports (181,400 tons) were still less than one-fourth of the pre-war quinquennial average. The value of the imports of railway plant and rolling-stock also increased by 70 per cent, but was still 81 per cent below the pre-war average. Imports of kerosene oil decreased to only 12½ million gallons, an amount which was actually below one-fifth of the pre-war imports.

EXPORTS

The chief features of the export trade were as follows. The total weight of jute manufactures exported decreased by 5 per cent as compared with the preceding year, while the value of these exports increased on account of higher prices by 23 per cent to Rs. 52 crores (£35 millions)—a record figure. The shipments on Government account during the four years, 1915-16 to 1918-19 amounted to 1,294 million bags and 644 million yards of cloth. The exports of raw jute were 43 per cent above the abnormally low exports of the preceding year but were still 48 per cent below the pre-war normal. With the failure of the monsoon in the middle of the year, the exports of food grains have almost entirely been restricted to countries with considerable Indian populations which are accustomed to rely on India for their food supply. The total exports of food-grains during the year were 3,248,000 tons as against 4,514,000 tons in the preceding year and 4,411,000 tons, the pre-war five yearly normal, truly a remarkable decrease.

DIRECTION OF TRADE.

The main feature of the direction of India's trade in 1918-19 was the remarkable advance made by two progressive countries—the United

States and Japan—in our foreign trade. The extent to which these countries have pushed their trade with India is sometimes not realised. The British Empire had 54 per cent of the total trade as compared with 53 per cent in the pre-war quinquennium, while the Allies increased their share to 34 per cent from 26 per cent. The enemy countries had 11 per cent of the total trade before the war and their place has been taken mainly by the Allies. Next to the United Kingdom, Japan held the premier place in the import trade of India, and the second place in the export trade, being surpassed in this respect only by the United States. (Cotton manufactures showed the largest increase and accounted for nearly 51 per cent of the imports as against 28 per cent in the preceding year. Over 238 million yards of piece-goods were imported from Japan as against only 3 million yards in the pre-war period. The total value of the trade with the United States showed an increase of no less than 131 per cent over the pre-war average. Metals (chiefly iron and steel) and mineral oil accounted for nearly a half of the import trade and the exports consisted mainly of raw and manufactured jute, raw hides and skins, and shellac.

FRONTIER AND INLAND TRADE

The frontier trade returns show an increase in the trade with the Shan States since the outbreak of war on account of the development of the mines near Nanto. The production of lead in these mines increased from 13,500 tons in 1915 to 19,200 tons in 1918, and of silver from 284,900 ounces to 1,970,600 ounces. In the rail and river-borne trade, there was a decrease of 26 per cent in the quantity of piece-goods exported in the nine months, April to December 1918, as compared with the corresponding period of the previous year. Almost all the principal importing provinces received smaller quantities of piece-goods.

SILVER

A special feature of the year was the large imports of silver on Government account from the United States under the Pittman Act of Congress of 23rd April, 1918. Shipments under the Act began to arrive by the end of May 1918, and the total quantity had arrived by July 1919. The total net imports of the white metal into India in 1918-19 were 122 per

cent of the world's production as against 26 per cent the annual average in the pre-war quinquennium.

BALANCE OF TRADE

The most interesting feature of the year is this, the large excess of exports over imports, that is, the large favourable trade balance. The gap between exports and imports of merchandise also was 156 millions. The net balance in favour of India, as estimated by the Director of Statistics after making allowance for the various items, was a new high record—111 million sterling, taking the rate of conversion at Rs 15 to the £. From this should be deducted 111 million sterling representing rupee credits for the Federal Reserve Board in part payment for American silver. It may be mentioned in this connexion that these rupee credits added to the net Council remittances do not exhaust the various channels by which trade could remit funds to India through Government. "The main event in this connexion was," as the Review points out, "the rise in exchange from 1s 5d (fixed on the 29th August 1917) for telegraphic transfers to 1s 6d on the 12th April 1918. The rise to 1s 8d, consequent on the decontrol of the price of silver in New York, did not take place until 13th May 1919." The rise to 1s 10d following a further rise in the price of silver was announced on the 12th, August 1919, and again to 2s on the 16th September 1919.

How To Get Trade.

An ounce of fact is worth sometimes a ton of argumentation. A representative of a British industrial firm, a very experienced man, arrived not long ago in one of the most important commercial cities of an important European country. He stayed in the biggest and, socially and commercially, most important hotel in the place, and then he went about to do his business. It took him three weeks to get his bearings, and another three weeks to make necessary arrangements with his customers. This was because he had no guide, says the *Times* Rome correspondent, no competent person to whom to go.

On the other hand, staying permanently at the same hotel, as he discovered, was a socially distinguished and commercially expert German,

placed there to be nothing but a guide for representatives of German firms (Assuredly he was a Political Agent too, but the former was his ostensible work, and he did it well) A German representative arrived in that city, stayed in that hotel, and in an hour's conversation with his resident *confrere* got all the information he required—a process which took the British representative three weeks. And he got specific information which saved further loss of time. For instance, if he travelled in, among other things, tintsacks, he learned not only what people in the city, district, and to a great extent country, wanted tintsacks, but what sort of tintsacks they wanted. If these were slightly shorter than or different from those he carried with him, it was a simple preliminary matter to produce tools and alter some of those he carried to the shape and size required. He then had on the spot ready the exact article demanded. All this was due to the permanent presence in that city of a well-pud, well-found representative of Germany.

The British representative complains that in no country he visits does he find such aid. He has to go and hunt, the German drives straight to a certain hotel, and finds there everything he wants.

VALUE OF DIRECTNESS

It would be an exaggeration to say that there are no organizations in existence from which the British representative in question can get information. There is in Rome a Commercial Councillor at the Embassy, with Secretary and staff, efficient if limited, but their functions are more political than those of the resident German mentioned above. There are efficient Chambers of Commerce in Rome, Milan, and other cities, notably the big commercial centre, Genoa. But a Chamber of Commerce is a body with which it is difficult to establish such directness of contact combined with promptness of execution as with a man who lives in a hotel, at which the representative himself too stays.

* * *

Angle-Indian Trade

ELIMINATION OF MERCHANTS SUGGESTED

The forthcoming visit to Manchester of Dr H Stanley Jevons, Professor of Economics in the University of Allahabad, is exciting interest. Dr. Jevons, who was for some time

a resident of Manchester, should have much to say to the cotton trade that will be worth attention. According to an interview published in the *Manchester Guardian*, he desires to promote direct trade between England and inland centres of India. His belief is that this would enable the Indian people to get English cotton goods, among other imported commodities, at a lower rate than at present. It is difficult, however, to see how short of an entire revolution in business methods within India, any real progress could be made in the direction Dr Jevons thinks desirable. Manchester ships yarn and cloth in bulk to importing houses, European and native, in the principal Indian cities, more particularly coastal cities, including Calcutta, Bombay, Madras and Karachi. The importing houses sell the goods to local merchants and dealers, from whom retailers get their supplies, the importing houses, or the merchants and dealers, also sell to dealers located in the up-country towns and villages, who resell to retailers in the interior. These inland dealers, who, in fact, are the chief distributors of imported as well as of other goods, do much of their buying when they attend the religious festivals in the great centres. They are mostly men in a small way of business, their individual purchases are only moderate in amount, and they are frequently financed by other dealers or by merchants in the leading cities.

ELIMINATING CALCUTTA AND BOMBAY

Direct supplies for the interior would have to go to these up-country dealers, unless special distributing agencies, under new auspices, could be established in the inland towns. New light may be thrown on the subject by Professor Jevons. In the meantime, it would seem that what might be saved by abolishing the intermediary profits and charges of Calcutta, Bombay, and other ports would be lost in the extra risks and expenses of trading with a larger number of customers scattered over a great area, not well supplied with means of rapid communication. It is important that the people of India should be able to purchase British cottons and other things at the lowest possible cost. But it does not at all follow that there would be any definite economy in doing up-country business

direct instead of through existing channels. Some direct trade is already passing between Manchester and Cawnpore and Manchester and Delhi. Where inland towns are able to offer facilities and opportunities for independent consignments, Manchester will doubtless be prepared to transact direct business, but such cases cannot be numerous, or sufficiently numerous to confer appreciable benefits on the Indian consumers.

It is peculiarly interesting and encouraging to Manchester to note that Professor Jevons, after long residence in India and long study of the subject, takes the Manchester view of Indian competition in cottons. He holds that the native industry does not now, and cannot for a long time, offer serious competition with Manchester. The Indian mills continue to produce almost entirely a coarse cloth made from low counts of yarn, and bought by the poorer classes. "One or two" mills, it is true, are beginning to produce the better class of fabrics on which Lancashire mainly depends, but their competition is not an important factor. The question, in the opinion of Professor Jevons, is one of labour—the unskilled native compared with the skilled Lancashire operative—and the use of short staple cotton.

Leather Trade

Whilst the consumption of leather is admittedly very heavy, supplies are also on a large and steadily increasing scale. American and Australasian shipments are arriving regularly in considerable bulk, says a British Contemporary, thereby substantially augmenting stocks.

In addition, the purchases made by boot manufacturers in July were evidently intended to carry them over the following quiet period, consequently they have not found it necessary to enter the markets except for certain lines of upper stock. The result has been a quieter trade. Values are really unchanged, but there are signs of an easier tendency, as is usually the case when consumers are in a temporarily independent position.

The American market, needless to say, is being very closely watched, and the latest advices of quieter trade and easier conditions in their raw hide market have had the effect of

encouraging the curtailing policy of buyers on this side, especially as it is well known that there are still considerable quantities of sole and upper leather and offal to be delivered.

The public sales of tanned East India goat and sheep skins showed the supply of goat skins was 896,776 skins, comparing with only 654,271 submitted in July last. The very high level of prices then reached, viz., 17s 9d to 32s 9d for Trichinopoly, 6/8lb, firsts, and 1s 6d to 30s 6d. for 7/9lb, seconds, among many other relatively high quotations, and the present "holiday" state of the light leather trade, together with the increased supply, all combined to make progress slower than at the previous sale. Best Madras tonnages were about 1s. a lb. lower, good middle-class descriptions about 2s 6d a lb., and fair and ordinary sorts are about 1s. a lb. under last prices.

The imported hide market has proved quieter, as very little business has been passing indeed.

* * *

America and Profiteering

The campaign for price reduction is the dominant issue of the day here, writes a New York correspondent in a contemporary. Everywhere in the United States public interest is concentrated on the domestic war declared on profiteering.

A statement has been issued by the Children's Bureau of the United States Department of Labour that 6,000,000 American children are underfed, in New York the Board of Health has reported that numerous poor families have been unable to afford meat, butter, and eggs, Labour leaders predict all-enveloping industrial war to come, and echoes are heard here and there of the threat of Bolshevism growing out of a situation that has brought hunger into existence in a country that has bumper crops and full storehouses.

President Wilson's address to Congress which brought about the uproarious campaign suggested ten principal remedies, which may be summarized thus --

Sales of surplus stocks of food and clothing in the Government's hands

Limit and control of wheat shipments and credits

Forcing into the market stocks hoarded in storage houses.

Prosecution of the most flagrant combiners

Increased appropriations for bureaus to keep the public informed of fair wholesale and retail prices

An amendment to the law providing adequate penalties for protecting

Extension of the food-control laws' period of operation and its application to more commodities

Laws limiting the time goods may be kept in cold storage

Marking on all packages destined for interstate commerce the price at which they were sold by the producer

Licences and regulations for all corporations engaged in interstate commerce to ensure competitive selling and prevent exorbitant profits

The programme has been subjected to some criticism, but on the whole it has been given abundant support by the Press

YARN PRICES AND HANDLOOM WEAVING.

For the past three months generally, says a Coimbatore correspondent, a cindy of Kombodia cotton weighing 520 lbs sells at Rs 250, to Rs 300, inferior varieties being sold at Rs 210 to Rs 250. Taking into consideration the average price, it costs Rs 50 for 1,010 lbs. Deducting 10 % for wastage, there remains 936 lbs to be made into 20s thread. Assuming that 936 lbs of yarn of 20s cost Rs 505, the cost of 1 lb is Rs 0-8-5. After allowing for expenses for 1 lb viz Rs 0-0-9 for fuel, oil, &c, Rs 0-0-9 wages, Rs 0-0-3 for repairing and wear and tear of machinery, Rs 0-0-3 for Mining Agent's commission and Rs 0-1-0 for dividend to shareholders, the cost of 1 lb of yarn of 20s inclusive of expenses is Rs 0-11-8. Thus the cost of 10 lbs of yarn works out to Rs 7-1-8. Even if the mill-owners sell the yarn to the weavers at the actual cost price, the shareholders can get a dividend of clear 10 % and carry 3 to Reserve Fund.

On the other hand, if the weavers are supplied yarn at the rate of Rs 7-1-8 per bundle they can weave it into cloth in their own handlooms and sell the cloth at a reasonable price. Thus, the making of yarn out of the cotton available in the cotton growing districts by means of machinery even on a moderate scale enriches the country in more ways than one. It pays the shareholders a fair profit for the investment of their capital in a Joint Stock

concern. It helps the poor weavers by supplying them yarn at a moderate price made in the country instead of the costly material imported from foreign countries. It helps to revive the cottage handloom weaving industry which is decaying owing to the abnormal prices of foreign yarn ruling in the market and the poverty of the weavers generally who are unable to meet them. It is to be hoped that the existing mill owners will consider the situation and reduce the prices of yarn. For enterprising Indian capitalists, there is yet room for more spinning mills in the Coimbatore District where climatic conditions are favourable, labour is cheap, raw material is available in plenty and the market to sell yarn to weavers is ready hand.

Coimbatore is thus very favourably situated, being the centre of the cotton producing area and can accommodate a few more spinning mills. In the circumstances stated above, there is little doubt but that the mill-owners will find it to their advantage as well as to that of the community in general so to arrange the output of yarn as to enable weavers to get it at prices favourable to them. It may be that the correspondent has not taken into account all the supply schedule. However, those interested in the matter will elucidate the problem and discuss it in all its bearings with particular reference to the development of the handloom weaving industry and the spinning mill industry.

FINANCE.

Standardizing International Banking.

A WORLD-WIDE MOVEMENT INAUGURATED

W. IRVING BULLARD, Manager of the Industrial Department of the Merchants National Bank of Boston, is visiting eleven European countries as the representative of the Boston Export Round Table. He has been sent to further the plans conceived by the Round Table to eliminate many of the obstacles which now block the path to the rapid and successful development of international trade. The objective of this trip is to form in more than twenty European cities committees of bankers. In each city one banker from this group will be appointed by Mr Bullard as adviser to the Boston Export Round Table Committee on Co-operative Relations between Foreign Banks and Exporters, of which committee Mr Bullard is chairman.

Simultaneously with the appointment of over twenty committee advisors in Europe and the formation of twenty banking committees in Europe, there will be formed in the United States similar committees and committee advisors in Seattle, Mobile, San Francisco, New Orleans, St. Louis, Chicago, Savannah, Baltimore, Cleveland, Philadelphia and Portland, Maine, in addition to six other cities which are under consideration. John Clausen, Vice-President of the Chemical National Bank of New York, and Vice-Chairman of the Committee on Co-operative Relations, is in charge of the formation of these banking groups and the appointment of committee advisors in the United States.

Mr Bullard's trip is a natural sequel to the Foreign Banking Conference of the Round Table held January 24, 1919 at the Boston City Club, which was attended by two hundred and fifty selected representatives of banking and exporting interests. At this meeting Walter F. Wyman, Chairman of the Boston Export Round Table, appointed two committees instructed to make a thorough investigation of present day international trade practice, and to carry through the adoption of approved and improved methods.

These committees are known as the Committee on Forms and Practices and the Committee on Co-operative Relations in New England and New York between Banks and Exporters. The former consists of Robert K. Sheppard, Professor Paul T. Cherington of the Graduate School of Business Administration of Harvard University, John Bolinger, Vice-President of the National Shawmut Bank of Boston and W. S. Benkiser, Vice-President of the First National Bank of Boston.

The second committee, that on Co-operative Relations between Banks and Exporters, consists of W. Irving Bullard, John Clausen, Vice-President of the Chemical National Bank of New York and H. H. Moise, Export Manager of the Regal Shoe Company of Boston.

These two committees co-operate with one another and with a group of advisors among whom are Thomas W. Pelham, Director of Sales and General Counsel of the Gillette Safety Razor Company, George E. Parmenter, Vice-President of the American Crayon Company, Vincente Gonzales of the Mercantile Bank of the Americas of New York, Harvey E. Golden of Edward Miller & Company, and Arthur S. Hillier of the Waltham Watch Company. In addition to the members, Walter F. Wyman, Chairman of the Boston Export Round Table, attended the meetings of both Committees in New York and Boston.

When the channels for distribution in Europe and the United States are complete and the plans have been perfected and executed for the appointment of similar committees and committee advisors in Latin America, the Far East and Africa, the work of the Committee on Forms and Practices will be brought to international prominence.

The ultimate objects of this important committee can be described as the establishment of a standardized code of banking and international trade practice, and securing its adoption by every civilized nation. This is something which is as necessary to the really successful development of international trade

as the League of Nations aims to be in the administration of world politics. Its effect will be to make it as easy for an American manufacturer to sell in Europe or Asia as in his neighboring state in this country. Delays due to differences in practice among the various countries will be eliminated. Misunderstandings because of these delays will be done away with and international trade will be carried on in a manner accepted and approved by all the nations involved. It is hoped and believed that this movement will eventually give to international trade the greatest stimulus it has had for years.

The next forward step, following the organization of the committees, was a meeting of the Committee on Co-operative Relations held May 13 at the Chemical National Bank in New York City. At the May 13 meeting the decision was reached to send Mr. Bullard abroad for the purpose of inviting foreign banks to affiliate with the Round Table in overcoming international trade obstacles, and through Mr. Clausen to perfect relations with foreign banking interests in Seattle, Mobile, San Francisco, New Orleans, St. Louis, Chicago, Savannah, Baltimore, Philadelphia, Portland, Muncie and other cities.

Formal authorization was given Mr. Bullard in the following letter:

"As chairman of the Committee on Co-operative Relations between banks interested in and merchants engaged in foreign trade, appointed at the Foreign Banking Conference of the Boston Export Round Table on January 24, 1919, you are directed to invite such bankers abroad as you may select to participate in and to secure the benefits of its deliberations.

The main function of your committee is to eliminate absolutely all artificial obstacles to the free flow of international commerce and banking."

While your committee is examining the best methods of bringing about a closer relationship between banks and those engaged in foreign trade and inviting the participation of international bankers, the Committee on Forms and Practices is preparing a concrete set of forms which will further the work of our committee and which it seems inevitable will be generally accepted because all parties interested in international commercial exchange will have been consulted and the final forms will represent the best judgment of those engaged in foreign trade.

Recognizing our international obligation, we instruct you to expand the work of the committee through affiliation with European bankers and you are authorized to make such appointments as advisors as in your judgment will best further the interests of international banking and commerce.

This letter was signed by Mr. Wyman as Chairman of the Boston Export Round Table, by Mr. Morse as Secretary and by Mr. Bullard and Mr. Clausen as Chairman and Vice Chairman, respectively, of the Committee on Co-operative Relations.

One of the most significant facts in connection with this movement by the Boston Export Round Table is its announced recognition of the international character of its obligations. Even some of the more experienced exporters in this country have looked askance at the idea of sharing with other nations the most exhaustive investigations which have been made in the Harvard School of Business Administration under the direction of Professor Cherington for the Committee on Banking Forms and Practices, and which have been conducted in other cities under the direction of other members of the Boston Export Round Table. But these investigations and the forms and practices of greatest importance will be shared freely.

IMPORTATION OF GOLD COINAGE.

A Press Communique states that intimation has been received from the Colonial Secretary, Colombo, that from and after the 17th October 1919, importation into Ceylon of British gold coinage is prohibited except in cases where

a licence has been issued by the Principal Collector of Customs, Colombo. The penalty for a breach of the regulation is six months' imprisonment or a fine of Rs 1,500 or both.

TRANSPORT AND POWER.

Engineering Education.

PROPOSALS OF THE SADDLER COMMISSION

The question of higher engineering education occupies 82 pages of the voluminous report of the Calcutta University Commission, which has just reached this country. Many of the questions discussed are of general professional interest, and though the recommendations relate primarily to Bengal, they have a close relation to conditions in other parts of India, says the *Times Engineering Supplement*.

The report may be said to dispose of the proposal to centralize higher engineering instruction for the whole of India into a single institution. It emphatically supports the recommendation of the Public Service Commission and of the P. W. D. Reorganization Committee that the four existing colleges—Madras, Bombay, Rangoon and Sibpur—should be maintained. Sketching the history of the last-named institution, which was founded in 1880 on the banks of the Hooghly, some five miles from Calcutta, Sir Michael Sadler and his colleagues give ample proof that the situation as regards the development of higher engineering education in Bengal is in a singularly tangled condition. In view of the unimproved sanitary state of the locality, as attested in technical reports, it is held that there is now no reason for the removal of the college, from Sibpur, and that it should be developed on the existing site.

A still more important conclusion is that the college is capable under existing arrangements of giving the training necessary for turning out competent civil engineers of university rank, and that no fundamental changes are required in this department, though there is evidence that the practical training which follows the college teaching is insufficient. Underlying the recommendations is the principle that the college should gradually devote itself wholly to higher or university work and that the lower or technical classes now accommodated in it should be provided for elsewhere. The Commission think that in view of the existing state of secondary education it would be

premature to lower the maximum age of admission from 21 to 19, and to reduce the college course from four to three years as the P. W. D. Reorganization Commission proposed. They welcome the arrangements being made for specialists' courses in civil engineering to be conducted by visiting teachers.

MECHANICAL ENGINEERING

The problem of training in mechanical engineering in Bengal differs essentially from the corresponding problem in this country, "because of the averseness of so many high caste Bengalis to use their hands, and because, unlike the English youth who wishes to become a mechanical engineer and who in accordance with universal tradition does the work of an ordinary workman and accepts the pelf of an ordinary apprentice during his training, the average Bengali youth regards such work and such pay as beneath his dignity, and is therefore unable to acquire the practical experience necessary to make a successful mechanical engineer." It was on this ground that a sub-committee of Sibpur College lately reported that there was no demand which would justify the local training of mechanical engineers of the university type. But this is not the present view of the principal of the staff. They point to the new situation created by the war, the expansion of industries due to military demands, the difficulty of obtaining engineers from Europe and the probability that the difficulty will not be diminished now that peace has come. The industries need the men and need them badly. They are perfectly willing and anxious to engage competent men quite irrespective of their nationality. A competent Indian, who can live on a lower scale of pay than a European, will have a great advantage. We must, therefore, forge ahead, and that without delay.

A like view was taken by the Industrial Commission, who proposed a plan based on the recommendations for engineering education of the Committee of the Institution of Civil Engineers in 1905, though with modifications. The two Commissions agree not only that there should be training for subordinates, but that the highest training in mechanical engineering

should be given at Sibpur, to meet the growing needs of Indian industries. The Sadler Commission see no reason why a university degree should not be awarded in mechanical engineering to students at the college. But every student should pass either before, during, or after his college course through a period of practical training extending over at least three years, and not different or less stringent in character for those who take the practical training after the college course than for those who take it before. If experience shows that direct entry to the college without previous training in the workshop leads to unsatisfactory results this alternative should be abandoned.

ELECTRICAL AND MINING.

Attention is directed to the views of the Industrial Commission as to the small scope at present in electrical engineering. The development of the electrical department of Sibpur, the present report says, should be referred to its future governing body. The courses of study in mining should be maintained and extended with special reference to the mining of metaliferous ores and various non-metallic minerals other than coal, and to oil mining. In view of the absence of organized provision for training in architecture, it is recommended that a scheme of training, leading up to a degree, should be organized in Calcutta. This could probably best be done at Sibpur, possibly with the co-operation of the School of Art

COLLEGE ADMINISTRATION

Sibpur is at present a Government college, and the governing body has powers rather greater than those of the governing bodies of other State colleges. The Commission do not concur in the proposal of members of the staff that the connection between the college and the university, which bestows the degree, should be severed. Attention is drawn to the weight of evidence heard on all hands in support of the view that the universities should take part in higher technological training. The Commission propose that Sibpur should become a constituent college of the university, with a constitution similar to that proposed for the Presidency College. They regard it as essential for its welfare that it should be brought into close touch with the recently established

Indian Institute of Engineers and with the great engineering firms in Calcutta, and that these should be interested in its management. With this end in view they propose a governing body to include representatives of Government, of the teaching body of the college, of the engineering profession and of the industrial interests concerned. It should receive a stated annual allocation from Government, and should, subject to audit, be allowed wide latitude in expending this grant and in obtaining funds from private sources, especially from the industrial interests served by the college. After detailing the relations which should subsist between the college and the university, the report expresses confidence that harmonious working would ensue and that the connection will be beneficial to both—"to the college because of the prestige which it will gain from the opportunities offered to its students to obtain university degrees and because of the contact of its teachers with teachers in the allied subjects of chemistry, physics, geology and mathematics, to the university, reciprocally, because of the variety given to its studies and of the breadth of view gained in discussions affecting university policy as a whole by the representations of engineering interests."

Two Great Engineering Projects.

SUTLEJ DAM AND HYDRO-ELECTRIC SCHEME

His Honour the Lieutenant-Governor of the Punjab recently left Simla for a tour down the Sutlej from Bilaspur to Rupar to consider personally at site two important schemes now under consideration by the Punjab Government (says the *Civil and Military Gazette*). These are the Sutlej Dam Project with its reservoir and dam at Bhakra and the Sutlej Hydro-Electric Scheme with the offtake of the Power Channel at Oel, some 16 miles above Bhakra.

The Sutlej Dam Project is in four parts —

- (a) Bhakra Dam
- (b) Upper Sirhind Canal
- (c) Lower Sirhind Canal,
- (d) Extensions from the Western Jumna Canal

THE HIGHEST DAM IN THE WORLD

The dam will be built across the Sutley River in the Bhakra Gorge, some 40 miles above Rupar, the headworks of the existing Sirhind Canal. It will be 395 feet high from foundation level to roadway, and in that respect will be the highest dam in the world. The present highest is the Arrowrock Dam of the Boise Series in Idaho, California, which has a total height of 348 feet. The depth of water in front of the Bhakra Dam will be about 375 feet against 240 feet in the Arrowrock—the latter having to go down 98 feet in the foundations before suitable rock was found—in the former good rock is found at once. The report of the Geological expert, who inspected the site before the Project was worked up, is exceedingly favourable. The length of the top of the dam will be 1,015 feet. The water to be stored by the dam in the month of August annually will be 2½ million foot acres.

For the Upper Sirhind Canal, the existing Head Regulator of the present Sirhind Canal will be enlarged and an extension made to the Sarsa Branch of the Western Jumna Canal, thereby affording irrigation to the dry tract between Patiala and Kuthul. Water of the Western Jumna series will thus be set free in the Sarsa Branch for utilisation in extensions elsewhere.

2,000,000 ACRES NEW IRRIGATION

For the Lower Sirhind Canal new head-works are proposed to be built on the Sutley at a place two miles from the battle field of Alwal and some 12 miles below the Phillour Railway Bridge. The canal from these head-works will cut across some of the existing irrigation of the present Sirhind Canal which it will absorb, while new channels will take water into the famine tracts of the Sarsa Tahsil and into the deserts of Bikmur. The water set free in the Sarsa Branch by reason of its being linked to the proposed Upper Sirhind Canal can then be used within the limits of the Western Jumna Canal for extensions to the dry tracts of Tosham, Pail Rahana and Beri Balaut which have long needed water, also there will be an increase of intensity in other parts of the existing irrigation. The total new irrigation anticipated is 2,820,342 acres. Thus

enormous area can only be affected by first storing the surplus water of the monsoon months at enormous expense. Such water is therefore extremely valuable, and to avoid waste and losses by absorption in earthen channels, it is proposed to follow American practice and carry the water in concrete lined channels—thus not only conserving the water, but reducing water-logging conditions. The whole scheme in magnitude and boldness of conception bids fair to rival the Tripal Canal Project of which the Punjab is so justifiably proud.

THE HYDRO-ELECTRIC SCHEME

The Sutley Hydro Electric Scheme was referred to in considerable detail at the Punjab Engineering Congress of 1919 in a paper on "A Project for providing the Punjab with a cheap supply of Electric Power" by Mr. F. L. Milne, A. M. E. E., Electrical Engineer, Simla. The Sutley river takes a big hair pin bend from Oel to Kuthpore. The distance round through the Bhakra Gorge is some 40 miles, while across it is only some seven miles. But a range of mountains, the top of which is 3,100 feet above sea level, intervenes. Therefore to get across this gap a tunnel 10,500 feet long is needed, ending in an open cut and forebay. From this forebay steel pipes can be laid to the power house 3½ miles away. After deducting losses of head due to friction in the pipes 400 ft working head remains for the turbines. With a minimum supply in the winter of 2,700 cubic feet per second, it is estimated that 60,000 kilowatts can be generated. If, however, the Bhakra Dam is built the requirements of the crops below will entail that never less than 7,500 cubic feet per second must be passed down so that 150,000 kilowatts will probably be the ultimate possibility of this scheme. The power generated if the scheme develops will be used to electrify the Simla Kalka Railway, provide lights and fans at Ambala and probably power to the mills there, light to the hill stations of Kasauli, Dagshai and Subathu, power possibly for pumping from tubewells in tracts of Patiala and Nabha not served by canals and for electrical extraction of metals from ores in the neighbouring Himalayas. There may also be possibilities of extension to Delhi, Amritsar and Lahore.

MOTOR TOPICS.

The Bombay Motor Trade Conference.

AT a meeting of the Motor Trade Association (Western India Section) it appears that most of the discussion concerned tyres, but it is believed that the cars will eventually be reached *via* the spokes and hubs. This is not written in any spirit of sarcasm being, as we are, fully conscious of the advantages of an association to motor traders as a body, and we welcome the new association very heartily. There is, however, a rather uneasy feeling in some quarters that behind the Association there lies an attempt to squeeze out certain firms who do not happen to be acceptable to some of their trade competitors. Our information, which is from an authoritative source, and not in any way connected with or interested in the matter, is that one of the biggest firms of tyre manufacturers in the world has got to "go". Undoubtedly, the motor traders of Western India know their own business best but one hardly expects a body of keen business men to permit itself to be made the chopping block for some equally keen tyre manufacturers who are experienced enough to be able to take care of themselves. Motor traders in Bombay should remember that if there is a war of price-cutting in tyres, discounts to dealers will be greatly reduced and the only person who will gain anything at all will be the private motorist. And he, in these days of inflated prices, will be profoundly thankful for any benefits which may accrue to him as a result of other people's folly.

THE MOTORISTS' MEETING.

We are informed that the inaugural meeting of the Bombay Automobile Association will be held at the Taj Mahal Hotel, shortly. It is intended that the meeting shall be a quite informal one in order to promote free discussion upon any subject which will tend to unite motorists into a strongly organised body. The proposed Association was originally suggested says the Supplement, the *Times of India*, and we are extremely interested in its welfare and progress, possibly, therefore, we may be permitted to express the opinion that the initial programme should not be too ambitious. Bodies like the Royal Automobile

Club and the Automobile Association and Motor Union of Great Britain were not formed in a day, and they did not attain their present authoritative position at one leap. Similarly, then, the proposed Bombay Association will find plenty of scope for its activities in purely local affairs for the first few months, and then when it has found its feet it can forge ahead as fast as it likes. This end will perhaps best be achieved by fixing the subscription as low as possible, say ten or fifteen rupees per annum, for all who join within a reasonable time, with a substantial entrance fee from those who sit on the fence until all the hard work is done and the Association is on a sound footing.

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Obviating Glare from Headlights

Practically every state of the United States of America has certain laws pertaining to automobile headlights. Years ago, before such laws had been introduced, numerous accidents occurred at night because of the blinding glare of passing cars. As a protection to all motorists, therefore, the various States have long since introduced laws which determine how much glare is permissible in any automobile headlight.

A simple test for automobile headlights has been in operation for some little time in St. Louis, and has set a standard for such lamps. The difficulty in determining what constitutes a glaring light led to the development of this device, which is of simple construction and equally simple operation. It consists of a box about five feet (1½ meters) high, with a slot in the front which admits rays of light from the auto lamps. They fall upon a curtain suspended within the box, and at the same time the light from another lamp placed back of the curtain falls upon its surface. The latter lamp is of the correct brilliancy, having been selected because it was considered neither too glaring nor too dim. Of course, this lamp will change with the rules of various places.

Through peep holes at the side of the cabinet the intensity of the light upon the test curtain may be observed, and if the automobile lamp throws a brighter ray than

that of the standard lamp, it must be reduced until the bars are of equal power, and if it is too dim, it must be brought up to the standard.

The test requires only a few minutes' time, and can be carried out in broad daylight.

IS THE LIGHT CAR COMING BACK?

From England and France come reports of the light automobiles which are now entering quantity production, in quantity production is understood in those countries. These light cars appear to be a normal development of the motor-cycle. True, they are four-wheeled vehicles and have the general lines of an automobile, even if much smaller and finer in appearance, but the power plant and general internal mechanism has much which suggests the motor-cycle. How these light cars will fare remains to be seen. In Europe, with its splendid roads and careful drivers, the light car may thrive. However, it was introduced in America some six years ago, under the name of the cyclo-car. It lasted but a year or two and then disappeared from the market and from American highways, for the reason that the light construction could not cope with the rugged travelling conditions in the United States.

A TIRE VALVE THAT GIVES WARNING

To inflate tires to the proper degree is one of the essentials of careful and economical motoring. In order to simplify the inflation of tires, an American specialty concern has recently placed on the market a unique tire valve which automatically whistles when the desired pressure is attained in the tire. The valve is set for the pressure called for by the tire manufacturer. The pump hose is connected in the usual manner and the pumping operation carried out. When the required pressure is reached the valve whistles.

MOTOR TRUCK MOVING VANS

There is very little moving done these days in leading American cities that is not handled by motor truck vans. Not only is the motor truck van capable of handling a greater and heavier load than the horse-drawn vehicle which it has replaced, but it covers the route in a far quicker time. As for expense, the experience of hundreds upon hundreds of cartage companies is that in the long run the motor truck scores a marked economy over the horse-drawn vehicle.

Instructions to Battery Users.

A writer in the *Indian Motoring* gives the following condensed instructions in the form of "Don'ts" which should prove invaluable to Motor Car Battery User, in obtaining the best possible results and maximum service from their batteries.

Don't charge for too long a period or at too high a rate. Reduce the current when the cells begin to gas. Never exceed the rates given in the instructions.

Don't charge during the hottest part of the day. Reduce the current if the temperature approaches 110deg F, and if necessary, stop the charge until the cells cool down.

Don't stop the charge too soon. See that all the cells are gassing before stopping.

Don't run the battery below 1.7 volts per cell.

Don't allow the battery to stand fully-discharged. Re-charge immediately.

Don't let the acid level fall below the tops of the plates.

Don't use unsuitable water for replacing evaporation. Use only distilled water and fill up just before commencing to charge.

Don't allow the sediment to touch the bottom edges of the plates.

Don't allow the interior of the battery compartment to become dirty and acid-sodden.

Don't allow spilt acid to remain lying about. Wipe off immediately with waste dampod with liquid ammonia.

Don't expose terminals or connectors to the acid spray, as corrosion will be set up. Keep all metal parts protected with vaseline or grease.

Don't allow metal, such as tools to lie about near the battery and so avoid danger of short circuits.

Don't take naked lights near the battery especially when charging.

Don't add acid to the cells except on the advice of a battery expert.

Items of Interest to the Importer

Judging from recent announcements of both car and truck manufacturers, it is evident that there is a general upward trend in prices. Increases have already been noted of from £50 to £300 since the first of July. There are few exceptions to the general tendency to advance prices in all classes of motor trucks and passenger cars. Hence there is little to be gained by waiting, for, to all appearances, prices will continue to climb higher rather than descend to pre-war levels.

THE WORLD'S LARGEST MOTOR TRANSPORT

A total of 122,128 passenger cars, ambulances, trucks, motorcycles, bicycles and trailers from the motor transport strength of the United States Army at home, with 121,139 in France, according to a recent statement by Brigadier-General C. B. Drake. Of these, passenger cars in the United States total 9,092, in France 9,809, motor trucks in the United States 57,712, in France 51,781, and motorcycles in the United States 16,712, in France 22,802, ambulances in United States 3,167, in France 7,089, trailers in the United States 23,543, in France 5,791. Under the plans arranged for an army of 500,000 men on a peace basis the War Department will require 4,192 passenger cars, 20,973 motor trucks, 10,170 motorcycles, and 3,591 trailers. The trucks will comprise 1-, 1½-, 3-, and 5-ton sizes, in addition to the four-wheel drive types.

A British Ford

A British contemporary recently published details of a concern which has plans for putting on the market within a short time a large quantity of cars, stated to be 150,000 built on Ford lines. It is proposed to import parts of cars from America, and our contemporary understands that a sufficient number of parts for an assembly of 100,000 cars is already in the country, but that statement has not yet been verified. The concern which is taking up the production is F. J. Wright and Co., Ltd., of Cagle Hill Works, Ramsgate, and the Managing Director is stated to have formerly been an active member of the Ford Co. in their works at Detroit. The weight of the car will be approximately 12 cwt., and the price in England will, it is stated, be £185, plus £6 10s. for delivery charge. An unusual feature is free

insurance covering theft, fire third-party risk, damage, &c., which is given with the car for 12 months.

Indian Cars for Australia

The correspondent of *The Times* at Sydney reports that Major Goddard, the Board of Trade envoy after careful inquiries, has expressed the conviction that Australia offers a vast outlet for English motor-cars, as well as for lorries and for commercial tractors. He believes that it would be possible to manufacture the vehicles in India and sell them in Australia at a price of £300 (while cars made in England would be sold at £450), which would permit them to compete with American cars. The Federal Government has been asked to allow at least a 25 per cent preference duty to British cars to allow them to compete with foreign makes.

Civil Aviation

The United States has shown that although the pioneer efforts of mail carrying aeroplanes may send up the fee per letter, the cost speedily drops as the work extends. At the commencement the United States daily air post charged 24c a letter, but within six months the fee was reduced to 2c.

An aerial mail service, inaugurated on an extensive scale should prove profitable to the Post Office. Properly organized it would entail in the initial stage the instalment of emergency landing grounds. The possibilities of small flying boats for postal work should not be overlooked. Machines of this type could penetrate to many isolated coast towns, where the postal services are somewhat primitive. Many of the large towns are provided with natural "landing" facilities in the form of waterways. Liverpool, Portsmouth, Hull, and Bristol are a few examples. Flying boats visiting these towns would not require the instalment of expensive aerodromes, for they could alight on their natural element—water.

Efforts in the direction of organizing Continental and inter-Empire airways are likely to facilitate the progress of world-wide aerial mail services. In parts where distances are large and railways poor there is wide scope—*The Times Trade Supplement.*

NEWS AND NOTES.

The following table shows the wheat prices guaranteed to producers by the various Governments for the year 1919. The unit is the bushel, and all prices have been reduced to dollars —

Algiers	2 46	Holland	\$1 3
Argentina	1 7	Italy	1 33
Australia	1 44	Morocco	1 5
Austria	2 1	Portugal	3 85
Brazil	1 1	Spain	1 4
Belgium	2 15	Sweden	2 90
Canada	4 1	Switzerland	1 50
Denmark	1 27	Tunis	1 1
Egypt	1 1	United Kingdom	2 5
France	1 1	United States	2 54
Germany	10		

The Ceylon Department of Agriculture and others interested in the matter are giving close attention to the cultivation of the castor oil plant outside the grown areas, in view of the increased demand for castor oil. At a recent meeting of the Ceylon Chamber of Agriculture at Colombo, members had the matter under consideration and proposals were adopted for facilitating the introduction of machinery for crushing the seeds and purifying the oil. Experiments carried out by means of an ordinary village press produced 20 per cent of oil obtained by the cold drawn process. With a larger press the yield was 33 per cent, so that the prospects with better machinery are promising.

Figures compiled by a statistician of the National City Bank of New York show that at the end of the war the paper money issued by 15 of the principal countries of the world amounted to \$111,000,000,000 being an increase of \$2,000,000,000 since August, 1914. This paper money is said to be \$20,000,000 more in face value than the gold and silver turned out by all the mines of the world in the 127 years since the discovery of America. Apart from this amount there are now in circulation \$20,000,000,000 worth of bonds and other forms of national obligations issued by the same Governments during the last five years. The National Debt of the world has advanced, according to the same authority, from \$10,000,000,000 at the beginning of the war to \$52,500,000,000 at its close.

A further development of American industrial banking is represented by the formation of the Textile Banking Company in New York. It has a paid-up capital and surplus of \$2,500,000. The Guaranty Trust Company and the Liberty National Bank are interested in the new concern, which will act exclusively as a commercial bank for mills engaged in the textile industry. It will finance purchases of new materials and other requirements, and will render the same banking facilities to the trade as it has been in the habit of receiving from factors and commission houses for many years past. Another American financial institution has been formed under much the same auspices. It is entitled the Mexican International Corporation and its purpose is to assist in the exploitation of the resources of Mexico by the promotion of financing and under-writing syndicates for Mexican businesses, and its capital is \$1,125,000, of which \$1,000,000 is in seven per cent preferred stock.

All the banking circles to hand from the United States show how the question of exchange is the dominating thought in American financial circles at the present time. The following table shows what a serious hindrance to the export trade of the United States is the discount on foreign currencies —

	Unit	Face value in U. S. Dollar	Approximate present value	Discount on par value
German	Mark	100	11 1/2	3 1/2
Italy	Lira	1000	11 1/2	3 1/2
Belgium	Franc	100	13 0	3 0
France	do	100	13 0	3 0
England	Pound	100	13 0	3 0
Switzerland	Franc	100	13 0	3 0
Holland	Guilder	100	13 0	3 0
Denmark	Krone	100	13 0	3 0
Norway	do	100	13 0	3 0
Sweden	do	100	13 0	3 0
Spain	Peseta	100	13 0	3 0
Argentina	Peso	100	13 0	3 0
Japan	Yen	100	13 0	3 0

This table may be regarded as a fair test of the gold value of the different currencies, for the United States is the only country where gold can be freely obtained. Therefore, her

currency may be regarded as the equivalent of gold, and the discount on other currencies as indicating their relative value to gold

* * *

The Canadian Board of Commerce, which will act under the Combine and Fair Prices Act, has now been constituted and will shortly commence its duties. The board has been given power to institute investigations on its own initiative or at the request of responsible parties who may bring complaints to its notice. A statement issued by the board announces that "all the records made under the previously prevailing investigation system will be secured and taken over by the board, and, in addition, as soon as the board can make the arrangements, and before the lapse of many weeks, the full board will, in joint session, visit all the principal cities of Canada and conduct therein open courts of inquiry into cost and price conditions and the means of remedying these conditions. When the intended sittings are held, they will be open to all who wish to complain or testify, or defend allegations made. No formality whatever, nor any notice, will be required. Afterwards from the information on hand and to be gained while on its itinerary the board will take such action as to it should seem proper by way of general remedy. Special remedies will be applied as the occasion for the application arises."

* * *

For some time past steps have been taken to organize an exhibition of the industries, the inventions, products, and raw materials of the British Empire to be held in 1921. A large and influential meeting was recently held in London, attended by the Premier, High Commissioners, and representatives of Overseas Dependencies, and others interested in the scheme. A resolution was passed that an exhibition on the above lines would be the best means of firmly binding together the peoples of the British Empire, and of restoring its commercial and financial supremacy to its original position. It has been decided that the exhibition shall be held under the auspices of the British Government, the Premier being President of the Council, Mr. Bonar Law Vice-President, and Mr. Walter Long President of the administrative committee. Extensive preparations are

being made throughout the Empire, and, to ensure complete representation, local committees have been formed in most of the large centres of industry. No exhibition previously held has had the advantage of such influential support. The British Empire Exhibition will offer an opportunity of demonstrating the magnitude of British resources at the time when such a demonstration is most needed.

* * *

In their report for the year 1918, the Committee of the City of Manchester Art Gallery say: "At the present moment a movement is on foot, supported by the Minister of Education and the Board of Trade, for enabling an Industrial Art Committee of the Royal Society of Arts to co-operate with the Arts and Crafts Society, the Design and Industries Association and Consultative Committees of the London County Council, with the object of raising and maintaining the standard of design and workmanship in industrial art produced by British craftsmen and manufacturers, and of stimulating the demand for works of real excellence. Manchester, being as it is the centre of a large group of manufacturing towns, should see that it takes a leading part in this movement, for there can be no doubt that for the healthy development of industry few things are more necessary than that it should draw constant inspiration from the best designers and artists. Successful industry is, in fact, and always must be, intimately bound up with art and the provision of an art gallery in which examples of the best obtainable work in the main branches of the industry can be seen and studied by the people is, in the opinion of the Art Gallery Committee, a practical movement for stimulating trade and for giving art its rightful place in the life of the community."

* * *

In the course of an address to the Alberta Industrial Congress held at Calgary recently Mr. J. E. Walsh, the General Manager of the Canadian Manufacturers' Association, gave some remarkable details illustrating the development of manufacturing in Western Canada. The following table shows the increased number of establishments and the capital employed in the three Prairie Provinces—Manitoba, Saskatchewan, and Alberta—from 1900 to 1917—

Year	No. of Establishments	Capital
1900	427	\$12,295,661
1905	511	17,036,133
1910	602	31,418,317
1915	1,581	15,811,510
1917	4,082	17,415,100

"These figures," and Mr. Walsh, "show what a remarkable increase took place in the last two years accounted for in the table." Mr. Walsh also gave some particulars about the Canadian Manufacturers' Association, and said that in the period from 1900 to 1917 the following increases had taken place:—

Establishments	135 per cent
Capital	520 per cent
Number of employees on salary	110 per cent
Salaries paid	305 per cent
Number of employees on wages	100 per cent
Wages paid	110 per cent
Value of product	526 per cent

In 1918 the membership of the Association was 1,550.

There is general agreement on the need for further forest research. Several associations interested in Germany in the paper and allied industries some time ago urged the establishment of an Institute for Cellulose Research. This proposal has recently been elaborated into a larger one for the establishment of a Holzforschungsinstitut (Wood Research Institute), to include not only cellulose, but all forest products, probably on the lines of the U.S.A. Forest Products Laboratory at Madison, which did such valuable work during the war. Foremost among this valuable work was the development of a process for manufacturing power alcohol from sawdust and wood waste, also the manufacture of explosives from wood pulp in place of cotton. Other products include guaiac and pyroxylin and, of course, resin, turpentine, &c. Great attention has been given in Germany to the production of synthetic resin during the last year or two, and it is now strongly urged that the same degree of attention should be directed to the exploitation of the natural product. Assuming a turpentine content of 2 per cent in the soft woods of Austria, it is estimated by Mangold that 250,000 tons of resin could be obtained. From the forests of Austro-Hungary and

Germany 800,000 tons of crude turpentine could be produced. In 1913 Germany imported 96,000 tons of resin from France and the U.S.A. Reference may also be made to another product of particular importance to Germany at present, and this is cedar-nut oil, a fatty oil obtained from the nuts of the Siberian cedar. Kerner states that the kernels of this nut contain 59.9 per cent of oil of first-class edible quality and that the collection of the nuts in the vast forests of North Russia presents no difficulties.

The world's supplies of sugar, say the Royal Commission, are so short that it will be necessary to employ a balanced system of rationing which will enable retailers to supply their customers with the authorized ration and to build up reserve stocks to meet any temporary delay in transport that may arise. As sugar is and will for some time remain a very scarce, it is only by the exercise of the strictest economy that it can be hoped to prevent a further rise in price in the world's markets.

The ability of the modern car to perform the duties of an express train has been well proved by the long distance journey of the King and Queen from Palace to Buckingham Palace, a distance of 550 miles, which their Majesties were compelled to undertake last week owing to the railway strike. The 550 miles journey was accomplished in two stages of approximately 250 and 300 miles, the car being a six cylinder Daimler, a make which has enjoyed the Royal patronage since the early days of motoring. The first stage of the journey was made on October 3rd, from Bulmohr to Lowther Castle, Penrith, the seat of the Earl of Lonsdale, where the night was spent the route being through Braconne, Perth, Stirling, and Lanark. An early start was made next morning at eight o'clock, and a straight through run of over 300 miles was accomplished to London, which was reached the same night. Mr. Oscar Humphrey, the King's chauffeur, was at the wheel throughout this long journey.

Motor Scooter as a Trade Vehicle

The advent of the motor scooter into the domain of commerce as distinct from pleasure is promised shortly. An American filmhuving company in London proposed to employ twenty of them to carry sandwichmen advertising their wares in the London streets.

Cotton Seed Oil.

In Britain the oil trade needs not less than 50,000 tons of cotton seed per month. Only 20,000 tons were imported in July. "It is probable that only from India can we hope to obtain enough cotton seed to place the oil trade in its old position. Little has yet been done to stimulate the import of cotton seed from India," says a contemporary.

We are waiting for the stimulant. Meantime we note that at Hull, the centre of the oil trade in Britain, the price of cotton seed oil is 98 shillings for crude Egyptian, and 96.90 shillings for crude Bombay. It would be interesting to know just why Bombay oil sells at a lower price than Egyptian, and to know if it is possible to improve the quality and raise the price.

Alcohol in the United States

Apparently in the United States all distilleries were on the same footing whether they produced alcohol for drinking purposes or industrial. Now a Bill has been introduced into Congress for the purpose of relieving distillers of industrial alcohol of the restrictions which have made production cost so high. Alcohol distilleries will be licensed and bonded under an approved plan and denatured alcohol sold tax free from domestic and foreign use. Alcohol without denaturants may be withdrawn tax free for the use of University and Research Laboratories and for hospitals, conducted without profits. It is intended that there shall be ample supply of suitable alcohol for the development of dyes, pharmaceuticals, new fuels and for scientific work generally. It is to be hoped that the Government of India will consider the terms of this Bill carefully and will

take suggestions from it and use them to make alcohol accessible for industrial and scientific purposes to the utmost extent in India.

BRITISH SOAP IN INDIA

The British soap industry is one of the best organised in the world, and its products have a unique reputation. The Chamber of Commerce (London) Journal thinks that British trade with India has possibly reached its highest point and that downward tendency may set in. The production of soap in India is on the increase. The West Coast is well favoured as regards the supply of suitable oils. In spite of the increased local manufacture the Indian market is not expected to be of less value to the British soap exporter, because the use of the better qualities of soap is increasing. The Indian market for imported soap is still worth about three-quarters of a million pounds sterling annually, the bulk of which is supplied by the United Kingdom. The exports of toilet soaps from the United States to India last year were in the neighbourhood of £20,000 in value.

* Officials at Marconi House promise some interesting developments in the near future. It is stated that wireless will do anything that can be done by ordinary telegraphy. Any photograph which can be sent by wire can be sent by wireless as well. The method being perfected is the transposition of a photograph on to a metal plate. The electric transmissions will be made according to the rise or fall of the metal contours. It will be possible very shortly, it is said, for a wireless message to be transmitted direct from the receiver to a working type writer, which will reprint the message at the rate of 100 words per minute.

It is stated that a British firm of Portland Cement Manufacturers has booked orders for several thousand casks of cement for delivery to India on account of the India office, and are also sending large quantities to the Dutch East Indies for Dutch Government work.

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Commerce & Industries.

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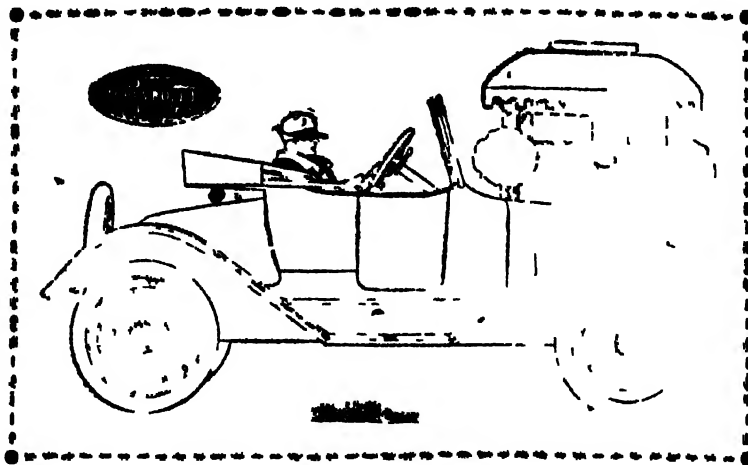
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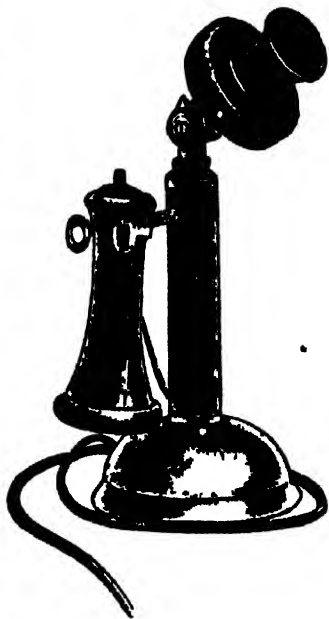
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The working of the Company will be in the hands of the firm of Messrs Mackenzie and Rajabally. This firm consists of Mr G. A. Mackenzie and Mr. J. M. Mahomed Rajabally. Both these gentlemen have been engaged in insurance business of all kinds in India for many years past and have a very wide experience.

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The Company will thus be controlled on sound British Insurance lines.

The Company having secured the services of the Managing Agents and having arranged for Offices and Staff will be able to commence business without any loss of time.

The Directors are all practical business men in close touch with commercial and industrial enterprises in India.

In order to induce Shareholders to take a lively interest in the affairs of the Company any holder of shares of the nominal value of Rs. 5,000 (at present equivalent to the paid up value of Rs. 1,750) directly placing business with the Company will be entitled to a special contributory bonus on premiums so earned by the Company out of the profits accruing to the Company on that business as the Board of Directors may from time to time decide.

As a large number of Indian merchants transact business exclusively in vernacular languages policies, circulars and other necessary information will be published with translations in as many vernacular languages as the Directors may consider expedient.

The preliminary expenses of floating and advertising the Company are estimated at Rs. 50,000.

No sum will be paid to the promoter.

No sum will be paid to any Director in cash or shares to induce him to become a Director, or to qualify him as such, or otherwise.

COMMISSION — No commission exceeding one per cent of the face value of the Shares will be paid to Brokers.

ARTICLES — The following agreement will be entered into by or on behalf of the Company —

An agreement between Messrs Mackenzie and Rajabally and the Company whereby Messrs Mackenzie and Rajabally will be appointed Managing Agents for a period of thirty five years and thereafter until they shall be removed by an Extraordinary Resolution of the Company passed at an Extraordinary General Meeting specially convened for the purpose, and of which not less than twelve calendar months notice shall be given, and at which persons holding or representing by proxy or power of attorney not less than three fourths of the issued capital of the Company for the time being shall be present.

The remuneration of the Managing Agents shall be a commission of 7½ per cent clear on the net premium annually received by the Company as shown in the Revenue Account of the Company and also on the net premium paid in respect of any other Insurance business placed by the Company. Such commission shall not in any year be less than a guaranteed minimum sum of Rs. 50,000.

The expression "net premium" shall mean and include the gross premium received by the Company in respect of risks covered by them less the cost of re-insurances effected in respect of risks covered by such premium and all rebates of premium paid commissions and allowances to Branches and Agents and Sub Agents in respect of such policies.

The Managing Agents will possess the various powers conferred by the Articles of Association.

DIRECTORS — The following are the provisions of the Articles of Association as to the qualification and remuneration of Directors until otherwise determined by a General Meeting —

- (1) The qualification of a Director (other than the *ex officio* Directors) shall be the holding of Shares of the nominal value of Rupees Five Thousand.
- (2) Remuneration Rs. 50 per meeting attended.

APPLICATION FOR SHARES — Application for Shares should be made upon the prescribed form and forwarded to the Company's Bankers, the Alliance Bank of India Ltd., Calcutta and the International Banking Corporation Ltd., Calcutta or to the Managing Agents, Messrs Mackenzie and Rajabally, with Rs. 18 per Share.

If no allotment is made the deposit will be returned in full and where the number of Shares allotted is less than the number applied for the surplus will be credited in reduction of amount payable on allotment.

Failure to pay any subsequent instalments on Shares allotted when due will render previous payments liable to forfeiture.

Copies of this Prospectus and form of Application attached may be obtained from the Company's Bankers, Managing Agents or Solicitors.

Copies of the Memorandum and Articles of Association of the Company and of the agreement above named may be inspected at the office of the Company's Solicitors or Managing Agents during the usual business hours.

A copy of the Memorandum of Association in accordance with Section 93 (a) of the Act is attached to the Prospectus.

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"Commerce and Industries"

Vol. I.

November 1919

No. 5.

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"COMMERCE & INDUSTRIES"

Vol I

NOVEMBER 1919

No. V.

COMMENTS OF THE MONTH.

Financial Situation in England.

THE month abroad has been conspicuous for economic unrest, labour strikes and industrial stagnation. In Great Britain, the financial burdens resulting from the war have seriously affected trade and industry and frantic efforts are being made for raising money to meet the national deficit. Mr. Chamberlain announced, in the House of Commons drastic and immediate reductions in the Army and the Navy. He denounced a general Capital levy but pointed out that the question of a special levy on wealth accumulated by reason of the war stood on a different footing. A Committee is to be appointed to advise the Government on this matter. Mr. Churchill announced that owing to the reduced armies of occupation, Germany's indebtedness would decrease to 45 millions. The financial difficulties in Austria would enable that country to pay only 15 millions out of 35 budgeted for. Mr. Churchill pointed out that 67 out of 118 millions which was the War Office deficit, constituted deferred payments. Fifty one millions have been spent in railway strike, the rupee exchange and the army. The extreme poverty in Germany might cause explosion at any moment and may affect Great Britain. In view of all this gloomy outlook, Mr. Chamberlain's optimistic prophecy that without additional taxation or borrowing a substantial surplus would be available in 1920 for the reduction of the debt has caused surprise in some quarters.

Coal-miners' Strike in America.

While the echoes of the Railwaymen's strike have not yet subsided in England, news comes of the Coal-miners' strike in America, revealing

strange combinations and connections. The attitude of the United States Government was firm towards the strikers and drastic measures were taken to suppress the disorder resulting from it and also to deport all aliens engaged in Red activities. As we write, the strike has not ended as the miners are not satisfied with an increase in wages of 14 per cent. and so negotiations for a settlement of the strike have broken off. There is again a strike of several thousands of iron moulders in England, a strike in Alexandria and in our own country, of mill hands, at Cawnpore. This unrest in the labour world is a manifestation of the wave of economic crisis now sweeping everywhere dislocating business and disturbing the established order of things. Industry can only grow when watered by abundant capital and skilled labour but the world-situation, at present, is not favourable to its development. We hope that the serious effects of the war, which are responsible for such things, are gradually beginning to be overcome and that ere long, there will be an end of these strikes and disputes and lock outs.

England and Coal Industry.

The coal industry in England has been getting into a state of chaos. In the House of Commons, a motion for the appointment of a Select Committee to enquire into the position of the coal industry with regard to the selling prices, profits, cost of production and output was brought forward by Mr. Bruce, which, though defeated, evoked discussion and brought out several interesting points from the Government. Sir A. Cluddes pointed out that a large supply had become available for export on

account of shrinkage of shipping engaged in coastal trade. In October, the coal industry showed a deficit of 9 millions sterling. A small proportion of coal which was being exported was making much profits and he anticipated, however, that the deficit would be paid off in December and that there would be a profit of 17 millions at the end of the financial year. Sir Geddes defended this position by stating that he did not wish to perpetuate the vicious circle of increasing cost and rising wages which will have the effect of strangling the industry of the country. Government have requested important accountants to examine the coal estimates and report upon the data on which reduction was based.

* * *

India and the Reforms.

The most notable event of the month in India has been the publication of the Report of the Joint Parliamentary Committee on Indian Reforms. We note with real satisfaction that the Committee have discharged their arduous duties in a manner acceptable to the people of India. The Reforms recommended by that body are conceived in a liberal spirit and are a first step on the road to Responsible Government. We join in the universal expression of praise of the labours of Mr. Montagu and Lord Sinha and for their success in overcoming a great deal of opposition in England from interested quarters. We do hope that Parliament will pass the Bill without further mutilation or delay so that the energies of the best minds of India, which are now occupied in political agitation, may flow in the constructive field of industrial organisation and development, which is the country's most crying need.

* * *

Fiscal Autonomy.

We must, however, express our surprise that the Committee have not recommended the grant of fiscal autonomy to India. The Indian witnesses before the Joint Committee were unanimous in pressing forward this demand. Unless India is to have an effective voice in deciding the fiscal arrangements within the Empire, we feel strongly that her interests will be subordinated to those of the other parts of the Empire. We note with satisfaction that the development of industries is to be transferred to Indian control but without fiscal autonomy, much cannot be done in this direction.

We have not overlooked the fact that the Government of India is to have greater fiscal freedom but as the Reforms proposed do not give us substantial control over the Central Government, there is not much ground for hoping that everything will be done with due regard to the interests of Indians and of Indians primarily. But still, we shall hope for the best.

* * *

Washington Labour Conference.

The Committee of the International Labour Conference at Washington has submitted to the Conference a draft convention providing that children under 14 should not be employed in any industries. Japan has accepted the recommendation with some reservations. Regarding India, it has been proposed to inquire into the extent of the distress likely to be caused by such a prohibition. We feel sure that there will be no difficulty in bringing into force a most humanitarian measure of this kind. By employing children under 14 in factories, the nation spoils a good deal of useful material. The employers will find it difficult to accommodate themselves to the new situation but both in the interest of the State as well as that of labour, we wish that there is an end of juvenile labour in India.

* * *

The Peace Treaty

The situation arising from the American Senate's action with regard to the Peace Treaty has caused a ferment throughout the world and in Europe, the position is considered as grave. The non-ratification of the Peace Treaty leaves America technically at war with Germany. In view of the serious economic position in central Europe and of the flaming advance of the Bolshevik movement everywhere, any delay in ratification will have the disastrous effect of upsetting the peace of the world. Disturbances are already reported from Ireland and Egypt. In Germany, the movement in favour of the discredited Kaiserdom appears to be gathering force. The League of Nations will be shorn of its plume if America were not to take active part in it. The world situation is distinctly menacing as we write, but the American newspapers are hopeful that an agreement regarding the Peace Treaty will soon be reached. We only say, Amen.

Madras Cotton Crop.

In an interesting paper which he read before the Madras Publicity Board, Mr H C Sampson, Deputy Director of Agriculture, Combatores, gave a history of the Madras Cotton Crop and indicated its future possibilities. The normal area of cotton in Madras cannot increase indefinitely because the possible area of country cotton is limited by the extent of Black Cotton soil. But in Madras, the Cambodia cotton which was introduced some 15 years ago became a common crop in garden, dry and wet lands throughout the Southern districts. The Cambodia cotton, though an entirely different species to the Indian cottons, is a crop which once sown will last three-four years, it requires no labour except to pick the cotton and with a lucky season may bring in a profitable return. The opportunity was fully availed of and the farmer strove to get every ounce of cotton which he could. But the Cambodia cotton crops offer conditions most favourable to the attack of insect-pests and disease. The damage done was very considerable but the Pest Act insisted on the eradication of all old crops of Cambodia, particularly in Combatores. But the cultivation of Cambodia cotton, on the present lines, would soon lead to its extinction affecting also the local cottons. If Cambodia cotton is treated as an annual crop there is immense future before it, as it will be not only a source of profit to the farmer but, if produced in sufficient quantity, will make India less dependent on foreign countries for the supply of yarn and cloth.

Sir George Barnes in Bombay.

At a meeting of the Indian Merchants' Chamber held on the 26th November in Bombay, Sir George Barnes in replying to the address of Mr Jehangir B Petit pointing out several of our grievances and requirements was of opinion that a very great step forward has been taken in the matter of fiscal autonomy. On the subject of Imperial Preference, Sir George said that a Committee will shortly be appointed to consider the question and appealed to the merchants to take a wide and statesmanlike view of the situation. Referring to the recent imposition of an import duty on hides and skins, the Member for Commerce

said that the object was to ensure that hides and skins should be converted into fully tanned leather in India or in other parts of the Empire, instead of, in foreign countries. On the question of the import of dye-stuffs into India, to which some unnatural restrictions have been put, Sir George said that Indian interests will be primarily consulted in the matter and with this view, instructions have been issued to the Collectors of Customs at all the ports in India to issue licenses in all cases where the dyes required cannot be obtained from the United Kingdom. Regarding the claim for the representation of Indian opinion before the revision of tariff valuation, Sir George would consider the joint views of both Chambers in Bombay. After pointing out what was being done in the matter of Civil Aviation Sir George appealed to the merchants to use their influence in the direction of caution in launching new industrial enterprises, as a crop of industrial failures at the outset would retard development of industries.

Co-operation in Mysore.

The Ninth Mysore Provincial Co-operative Conference was held under the presidency of Mr G K Devadhar, Vice-President of the Servants of India Society. The address of Mr Devadhar analysed the growth of the Co-operative Societies in India and also in the Indian States. Referring to the work done in Mysore, the President said that "if praise coincides with truth, I want to give it frankly" and proceeded to explain how rapid the growth has been. He also paid tribute to the endeavours of the Government in assisting the societies with men and money. From 5 societies in 1905-6, the number has grown to 1,350 at the present time with a membership of about 92,000 and a working capital of 90 lacs. Mysore, said Mr Devadhar "occupies a position of great pre-eminence in the Indian Co-operative world". The President also paid a well deserved tribute to H H The Yuvaraja for his valuable services in the cause of co-operation, to the Registrar, and other officers and concluded his thoughtful address by an exhortation to all to promote the work of co-operation in the State.

EDITORIALS.

Imperial Preference.

THE problem of Imperial Preference in its application to India is undergoing a great deal of discussion both in the press and on the platform. Coming close upon the publication of the Report of the Selbourne Committee, which has not recommended fiscal autonomy for India, this topic has an unsavoury air about it. The recent orders of the Government of India in putting restrictions upon the import of dye-stuffs, in a manner most unfavourable to the Indian manufacturer and in allowing a rebate of 10 per cent. on hides and skins to countries within the Empire lead us to conclude that the policy of Imperial Preference has already begun to work. We do not deny that, as part of the Empire, India has certain obligations to discharge, economically and financially, but we cannot share in Sir George Baines' optimism that, in our legitimate pride in belonging to the Empire, we can countenance any measure which will tend to sacrifice the interests of India for the benefit of the other parts of the Empire.

What India wants at present is the power to decide her own fiscal policy and the right to manage her affairs in the way she deems best. She is industrially the most backward country in the world and until she is in a position to stand on her own legs and compete with the world's markets, her nascent industries need protection. For this, India must have full power to regulate her fiscal laws. If the self-governing Colonies of the Empire have the right to frame their own tariffs, we do not understand why India should be denied this same privilege. In replying to the despatch of the Government of India on the Industrial Commission Report, the Secretary of State says that the question of fiscal autonomy was deliberately excluded from the scope of the Commission. We are unable to find any convincing reason for this indefensible action on the part of the Government except it be to burk the question and allow India to be the dumping ground for foreign exploiters. Fiscal freedom, it needs no reiteration, is the very backbone of all industrial progress and if our rulers earnestly desire, as we hope they do,

that India must become industrially great, they must realise that this cannot be done by evading the solution of the problem of fiscal autonomy. If the Industrial Commission had been allowed to gather evidence on this question, there would now be before the country, a mass of convincing arguments in its support. We regret that this opportunity was not availed of.

India can have little objection to Imperial Preference if that means that preference will be given to the interests of the sons of the soil over the interests of the other parts of the Empire. The Colonies, if we mistake not, are having preference of this kind. But if Imperial Preference becomes Imperial exploitation, nobody can, for a moment, accept such a policy. In regard to dye-stuffs Great Britain acts as middleman and the hardships and losses which this arrangement involves may well be understood from the following representation of the Indian Merchants' Chamber, Bombay, to the Member for Commerce and Industry —

'The restrictions imposed are for all practical purposes in the nature of a subsidy for the British Dye manufacturers. If these stand in need of any protection my Committee submit it should have been given as a subsidy and openly by the Imperial Government and not by the Govt. of India, creating almost a monopolistic market in India for the benefit of the British Dye manufacturer or trader. To thus punish Indian industry and trade for the purpose of giving an indirect subsidy to the British Dye manufacturer or trader is, my Committee consider, opposed to all principles of even fair trade within the Empire. My Committee would like to know if restrictions of this character have also been imposed either in the United Kingdom or the self-governing Colonies. I hope you will excuse my Committee for drawing the only inference possible that the restrictions are imposed to benefit at the expense of India the British Dye manufacturers and traders who may, for aught we know, even import dye-stuffs from foreign countries and shop them here. We were recently informed that the first consignment of

dyes according to the repatriation terms of the Peace Treaty was coming shortly from Germany to the United Kingdom, and it is not at all unlikely that a portion of this will find its way to India through the British merchants at rates far higher than those for which they were obtained.

Again, while there is an export duty of 1 per cent on raw hides and skins, we cannot understand why a rebate of 10 per cent should be allowed to Great Britain and much worse to South Africa and Natal. Sir George Baines repudiated that any general scheme of Imperial Preference was involved in this arrangement. We confess we cannot follow the Committee Members' argument. If the Government are really solicitous of the welfare of Indians and desire to protect their interests, the right way to do it, we believe, would be to impose an import duty of 15 per cent on foreign manufactured leather goods. It is the Indian cultivator that will suffer for the sake of Empire.

Sir George Baines announced that a Committee would be appointed, on which unofficial members will be represented to obtain the views of the public on the general principles involved in the subject of Imperial Preference. While feeling thankful for this concession, we feel strongly that the first and essential necessity of India is to secure fiscal autonomy. If additional burdens are to fall on the poorer classes in this country, what matters it to them which country benefited at their expense? We desire that any discussion, at this stage, of the policy of Imperial Preference, while yet we are not fiscally free, will be disastrous to India. As we are not on terms of equality with the other parts of the Empire, any decision that may be arrived at will be forced on us. We have already had a foretaste of the new policy in the matter of dyes and hides.

We make an earnest appeal to Indians to concentrate their attention in winning fiscal autonomy before she lends herself, in an unguarded moment, to support this novel kind of Imperial Preference. We make no apology for quoting below a passage from the address of the Indian Merchants' Chamber, Bombay—

"Fiscal freedom for India is what my Committee have always urged as the very backbone of all commercial and industrial progress in

this country. My Committee take this opportunity of drawing your attention once more to the Committee's emphatic opinion on the subject. If the Colonies can have full fiscal freedom and can adjust their tariffs in their own interests even against England without sacrificing Imperial interests there is absolutely no reason why India cannot. I may be permitted to add that in the opinion of my Committee it is impossible to make India industrially great unless full fiscal authority is given to her."

* * *

The "Pioneer" and Indian Industries.

WE notice that our All-India contemporary appears nervous over the recent action of the Indian capitalists in launching various new companies in this country. It calls this is the 'fever of speculation' and says that this is the result of the 'wide-spread belief that in industrial India can be created in a day.' We may assure our contemporary that there is little truth in its observation. Even if India desired this consummation she cannot achieve it as she is hampered, on all sides, by innumerable restrictions. It has long been one of the earnest hopes of the Indian leader that Indian industrial development must advance side by side with her political progress. Owing to various causes, this was not possible. It was felt, by actual experience, that no advance in the field of industrial development was possible without political power. Now that a new constitution is shortly to change the political relations between the rulers and the ruled, Indian capitalists feel that they can, with advantage to their country, invest their capital in large concerns and expect to see the unnatural fiscal arrangements in this country disappear very soon. This is, we believe, the real reason. While we admit that there is great risk in hasty and ill-considered ventures, we do not feel with the *Pioneer* that there is anything wrong or unnatural in these developments.

As regards the alleged unfairness of the transfer of industrial development to Indian control, we can answer that Indians have experience in managing great industrial concerns and we do not wish to cite any names in support of our statement. The 'dangerous possibilities' spoken of by our contemporary exist only in its imagination and in its desire to continue to profit at the expense of India.

The Government of India with the best of intentions, have not been able to promote the industrial conditions of India, or rather they were hedged round with difficulties which barred the free encouragement of Indian industries. Where they have not been able to achieve much, it is only fair that they must seek the co-operation of Indian leaders in this necessary work. We fail to see, therefore, any point in the *Pioneer's* latest outburst

Himalaya Assurance Co., Ltd.

Rai Bahadur Sukhlal Karami, O B E, is very well-known not only in the Punjab, but also on this side of India for his biggest subscription to the war loan as well as his numerous gifts in the shape of money. He has just made a gift of millions of peace flags and as a businessman he is very widely known. He has already floated in Calcutta the Kunim Industrial Bank the shares of which are already quoted at premium. The Rai Bahadur is at the head of these concerns, and without benefitting himself he has so economically arranged the construction and management of these concerns that it is no doubt he has proved to India what others should do thereby advancing the welfare of the Indian public at large. In order to consolidate and strengthen the position of the Bank and not to give the Bank any taint of suspicion, the Rai Bahadur has launched under his direct supervision an Insurance Company, namely the Himalaya Assurance Co., Ltd., the salient features of which go to prove that it is one of the most generous and solid concerns. All the capital and other funds will be invested in Government securities. Many Insurance Companies came to grief in advanced countries like America, which is called the mother of insurance and these evils are very well exposed in the pages of the voluminous judgment of the New York Commercial or Insurance scandals where it is found that the promoters (Agents or Managing Directors mostly utilised the funds for starting and financing speculative ventures beneficial to themselves directly or indirectly. One of the Companies investments to the extent of Rs 30 lakhs were in the landed property in Russia. This did not give any return to the Company for years together. Ultimately it was found that the top man had purchased these on his own

account on the expectation of finding gold there and when it proved a failure sold the same to his Company at a fancy price. Human nature is always liable to temptation where money plays a prominent and mischievous part. Unfortunately Indian commercial knowledge and lack of education does not allow even an expert businessman who generally deals in millions to scrutinise all these evils. Risks to the extent of millions are without hesitation lodged with an Insurance Company without ever thinking of the solidity and safety of their investments and a policy which is not more than a piece of paper is looked upon as the only safety for future insurance. Rai Bahadur Sukhlal with his able Managing Agents seems to have discounted all such fears by safeguarding all the investments to their best. Moreover in order to prove the *bona fides* of their investments it is proposed to lodge all securities with the Bank of Bengal for safe custody and the Company will from time to time issue in public papers statements of such securities held by them. All these things prove that the Company's policy will be very genuine and most shareholders think their money being always in Government paper must be reckoned as gilt-edged security. This is the most opportune time for this Insurance Company to invest all its funds in Government securities because there are absolutely no chance of these depreciating further and the return by the way of interest is also very satisfactory. We understand the Company will invest part of their funds in War bonds issued in Great Britain. By such remittances to Great Britain, the Company will reap in extra advantage of the present high exchange. Since the shares are gilt edged there is no possibility of their price going down in the worst crisis. From the interest return only the company will earn at least 5 per cent and it is no surprise with vast possibilities in India for insurance owing to the higher prices of properties and commodities, the Company would command an exceptionally large business. From the reports of other Insurance Companies of the world it will be very easily seen that Insurance Companies always prosper except where funds are handled for selfish motives. As all the precautions have been properly taken we do not see why these shares would not be classified as trust security. When we say that Insurance Companies always prosper it means that on

the law of average this business is done, and since the law of average never goes wrong, so the insurance calculations go the same way. The Company has also given the profitable inducement to its shareholders by way of contributing special bonus at the end of every year out of the profits on whatever business the shareholder may send direct to the Company. Thus the Company will communicate directly with their shareholders and avoid the charges of middlemen whereby a great portion will be saved and prove advantageous to shareholders themselves. We should, therefore, recommend all businessmen and property holders to possess the minimum number of 500 shares the cost of which is Rs. 1,750 paid up for 2 years. We congratulate the Riu Bahadur on his talent and foresight in the construction of the Company, and we are proud to call him "Culcitra Tati" of our side. We wish all success to this Company, and would recommend many other promoters of other concerns to make their securities by following the principles of the Himadriya Assurance Company, Limited.

Indian Industrial Commission.

The Government of India have, at last, published a resolution on the Report of the Indian Industrial Commission which was published in October 1918. The resolution gives some idea of the proposals likely to be adopted. The views of the Secretary of State on the subject have also been published for the information of the people. The Government of India state that they addressed Local Governments on the 7th December 1918 and obtained their views on certain questions of principle. They addressed the Secretary of State in their Despatch of 4th June 1919 and the latter's reply dated 24th September 1919 has been made public. In this connection we would like to know what steps the various Local Governments took to obtain the views of the Commercial communities before definitely replying to the questions raised by the Government of India. Coming to the proposals themselves, we note that the Indian Munitions Board is to be reconstituted into a Board of Industries and Munitions. This Board is to be under the direct charge of the Viceroy and the constitution is not clear as to whether any Indian member will be associated with it. Mr. Montagu accepts the recommendations of the Industrial Commission that the

Government should play an active part in the industrial development of the country and that this cannot be done unless they are provided with adequate administrative equipment and furnished with reliable scientific and technical advice. After describing the various forms of assistance which Government can give in the matter, he leaves the details to be decided by the Government of India. Regarding the fiscal question, the Secretary of State says that it would be premature to discuss it and he is not prepared to make any recommendations until the views of the people are known. Why this question was deliberately excluded from the scope of the enquiry of the Industrial Commission, Mr. Montagu does not make clear. Had the matter been referred to it, there would now be available a mass of evidence sufficient to enable us to decide the problem. If, however, the Secretary of State is earnest in this matter, there ought to be no difficulty in appointing a Committee to consider the whole question. The Secretary of State favours a large measure of provincial independence and desires that Local Governments must be given a free hand subject to certain reasonable reservations. An All-India Industrial Service is to be created and that expert Committees are to be appointed to consider the recommendations of the Commission. We feel sure that in matters of this kind there will be neither favouritism nor partiality and that Government assistance, whether Provincial or Imperial, will not be bound by any hard and fast rules but will follow the advice of the respective Advisory Boards as to what sort of assistance will be needed for a particular industry.

We await with great interest the further steps of the Government of India for giving speedy effect to the recommendations so far made.

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Buying from Germany.

The low price at which German goods are now being sold abroad, owing to the rate of exchange, is apparently alarming economists in Germany as well as manufacturers in the neutral countries which receive these low-priced goods. The attitude of the neutral countries is, of course, the same as that of some British manufacturers who object to the competition of cheaper goods than they can themselves produce.

On the other hand, the German economists take the view that Germany is ruining herself by selling goods at such a low price to her neighbours. Both views are quite tenable, but the real question that the world has to consider is whether there can be any practicable solution to such a problem. During the war it was frequently everywhere that there were two alternatives with regard to post war trade with Germany. We might take the view

that we would have no trade at all with a people who had so disgraced civilisation, but if we took that view then it necessarily followed that we should get no indemnity out of Germany for the cost of the war. The argument hardly needs to be pressed. Debts from one country to another can only be finally paid in goods, and therefore if the Entente Powers decline to take German goods they can by no possible means get any German indemnity.

REVIEWS.

Industrial Possibilities of India.

By R. TIRUMURTHI RAO B.A., LL.B.,

(Simulasa Varadachari and Co., Madras)

The author has taken much pains to bring together in a handy volume many important papers bearing on the industrial development of India. He hopes, by this means, to acquaint the 'lay public of India with modern industrial methods and processes as practised in the West'. There are on the whole 16 chapters and some of the most important industries such as, iron and steel industry, manufacture of portland cement, of paper, oils, soaps, candles, etc., have been dealt with in an intelligible manner. A running survey of the Industrial Commission's Report is recorded at the end and the author makes a strong appeal to Indians for the building up of their industries. We have much pleasure in commending this readable and informing book to the notice of our readers.

Report on the operations of the Madras Currency Department.

(SUPERINTENDENT, GOVERNMENT PRESS, MADRAS)

During the year under report, there was a shortage of silver and the Mints at Calcutta and Bombay worked at high pressure to meet the demands of the public. But the shortage led to the expansion of paper currency. The Bank of Madras undertook currency exchange work on behalf of Government in ten districts in this Presidency. The foreign trade of the Presidency improved from 2,911 lakhs in 1917-18 to 3,601 lakhs in 1918-19 or by 24 per cent and the coasting trade from 1,121 lakhs to 1,810 lakhs or by 37 per cent. Throughout the year the balances at the Bank have been high but this is said to be due to the fact that receipts from the sale of Treasury Bills and for the Second War Loan were not withdrawn from the Bank until actually needed for Government disbursements.

Young Collegiate

An educational monthly for students (Young Collegiate Office, Sandhurst Road Bombay, No 1).

We have received the first number of this magazine which has been started for the benefit of students. It contains a varied selection of articles pertaining to the student world besides a few illustrations of leading educationists. We wish our young contemporary a long life of usefulness to the younger generation.

We acknowledge, with thanks, the receipt of the Annual Report on the working of the Factories Act for the year 1918 and also Annual Report on the Foreign Trade for the year ending 31st March 1919, from the United Provinces Government.

We have received a copy of the Report on the working of Co-operative Societies in Behar and Orissa for the year 1918-19. We congratulate Khan Bahadur Mohi-ud-din Ahmad, Officiating Registrar, on the successful working of the Department during the year, in spite of the adverse conditions prevailing during the period.

PAPER-PULP INDUSTRY.

By Rao Sahab G. N. Sahasrabadhe.

MECHANICAL PROCESS

Pulp appears in commerce in two different forms, these being the "mechanical pulp and the chemical pulp"

In the production of mechanical pulp, no chemical treatment is involved. The operations are all of mechanical nature and hence the name under which the material is dealt with in commerce. The mechanical process consists of grinding the material in order to separate the fibres and as the material is ground off it is washed thoroughly by flowing water, passed through screens, formed into thick sheets, from which water is extracted by mere pressing, packed into bales and shipped as "Mechanical pulp". It appears in market in two forms as "Wet mechanical" and "Dry mechanical". It has certain disadvantages. It has less "felting power" and consequently is used only for low grades of paper. Yet it has got a great demand

CHEMICAL PROCESS

Chemical process is a much more complicated process. By this process the material is got rid of its non-cellulose compounds, thus leaving behind only the pure form of cellulose and this is effected by treating the material with some chemicals and the particular re-agent used, gives its name to resultant product. Hence we have in commerce, soda pulp, sulphate pulp, etc. Different species of wood, grasses, rags, etc., all yield to this process. In each case, the preliminary treatment is the same. Take wood for illustration. The wood is cut into chips, bark removed, knots bored out, and is cleaned of dirt and dust. Then comes the digesting operation. The chips are digested in a solution of alkali or acid, special attention being paid to pressure, temperature, and duration because the final percentage yield of cellulose mainly depends upon these

Of the two processes, the chemical process has a wide application owing to certain advantages. Chemical "pulp" possesses comparatively more "felting power" and

hence is used for high class paper. Speaking with reference to the various raw materials available in India, all those can be worked up by chemical process only whereas the species of wood, with certain exceptions, can undergo both the processes.

A NEW METHOD OF PAPER MANUFACTURING.

It is reported that a company has been formed in Gothenburg for the purpose of manufacturing paper, cardboard, etc., by a new method. The new method differs chiefly in one respect from that now in use for paper-making, viz., the employment of chalk as filling as well as binding material. Chalk has certainly been used in many places before now as a paper-filling material, but it has always been neutralised by adding carbonic acid to the solution, and it has thus been necessary to use a binding material. By this new method chalk is, however, used as a binding material as well and a double purpose is thus served. The chief advantage is, of course, the comparative cheapness of the new product. It is said that the paper is of smart appearance, the quality at the same time being very good.

STRENGTH OF PAPER

From an examination of various papers prepared with different proportions of rags, sizing and boiling it appears the mechanical properties are improved by increasing the proportion of rags. Rozin sizing diminishes the strength while animal sizing increases it. An increase in the proportion of rags, also sizing of any kind, enables a larger proportion of leading materials to be retained by the paper. Loading decreases the strength of all papers—the percentage of loss approximating 22 times the percentage of loading material.

The following are the raw materials that are at present available to us in India for pulp making some of which already find their way to the Paper-mills —

- (1) Sabai Bhabai or Baib grass (*Ischaemum Augustifolium*)
- (2) Mung grass (*Saccharum Arundinaceum*)

- (3) Rags, hemp, jute, gunny bags, etc
- (4) Different species of wood, chief among them being the Himalayan spince and "Silver fir".
- (5) Cotton stalks and corn stalks
- (6) Elephant grasses *Certain species*
- (7) Pine-apple fibre

Baird grass fulfils the necessary conditions namely, concentrated large supplies and its suitability for the production of "Half-stuff". It occurs in great quantities in Bengal, Chota Nagpur, Nepal, Taiar, parts of Central Provinces, Central India, in United Provinces, Rajputana, in the Punjab extending into Afghanistan, generally growing on warmer slopes and on steep hill-sides. However, the chief and important localities supplying the grass to the paper mills are United Provinces, Bengal, C. P. and Nepal. It holds at present the first place in India as a paper making material, as up to 50,000 tons of grass are consumed by the paper mills. The average price of the grass per ton comes to Rs. 9 in round figures.

Mung grass is a reed-like grass with a yellow long straight stem and is generally found in lowlying localities. It occurs in the plains of India. Its use is not so extensive as that of Baird grass owing to the fact that percentage yield of cellulose is comparatively low.

As for bamboos, there are principally four species that give us the best results and fulfil at the same time, the necessary conditions. These species are

- (1) *Dendrocalamus strictus* (the common male bamboo)

Bamboos (2) *Cephalostachyum pergracile* known as *Tinwa*

- (3) *Bambusa polymorpha* (kyathaungwa)

- (4) *Thakwa*

As regards these, a thorough investigation has been carried out as to the utility of these species. For paper making, the well-known expert Mr. Syndall who was specially deputed to Burma by the Government of India in 1906 has published a most important note giving not only the results obtained based

on tests carried out on a commercial scale but also, information as to the outturn, cost of extraction, suitable localities, etc.

MR. SYNDALL'S INVESTIGATIONS.

The following table gives the percentage yield of unbleached pulp from the species tested of different growths —

Age	Tinwa	D. Strictus Myanwa.	Kyathaungwa	Thakwa
Growth of	P. C.			
2 years	50.0	55.0	45.8	49.0
1 year	50.0	51.0	44.0	50.0
5 months	50.0	50.0	48.0	47.5

The common male bamboo (*D. Strictus*) which is comparatively small, either solid or hollow, is the most valuable and as such is mostly used. This variety is found all over India and Burma but not in Eastern Bengal and Assam. Another experimentist—I mean—Mr. Sumanas Dhirva who carried similar investigation in Banda State, gives the following percentage yield of unbleached pulp from the species referred to above. These are the results —

Variety	P. C. yield.
(1) Tinwa	44.5
Dhirva's investigations	
(2) Mainwa	41.0
(3) Kythaungwa	45.4
(4) Thakwa	.

SPECIES OF WOOD

From the above, it is quite clear that these species of bamboos give us satisfactory results and as such are workable on a commercial basis. The following analysis by the well-known pulp-experts, Messrs. Cross and Bevan, would be found interesting —

	Cellulose	Air dried.
		50.13
Bamboo		
Fat and wax	..	0.78
Aqueous extracts	...	10.56
Liquis and Pertons	..	24.84
substances	..	8.56
Water	..	5.18
Ash
Analysis of "Bamboo".		

The principal localities that give us enormous supplies of bamboo, are Burma, Eastern Bengal, Assam, Bombay and Madras Presidencies. The utilization of bamboo for paper making has now been conclusively proved and so the question has now passed the stage of speculation and experiment and is "as Mr Syndall aptly remarks" a practical commercial problem

As for rags, waste paper, etc, it can be safely said that though they form a part of the paper-maker's materials, yet in view of the Nature's help given to the paper-maker, in the enormous supply of various materials, it would not be too much unwise to speculate that the use of rags, etc, would become extinct at least as a matter of economy

As regards various species of wood, that are abundantly found and, it is probable, would satisfy the necessary condition, namely, concentrated large supplies and their suitability for pulp-making, all that can be said at present is that the matter deserves the attention of the Government and the pulp experts in the country. I shall sanguinely hope that some of our patriots would come forward and do research work in this direction, with the help of the Government. Mr Syndall has rendered a valuable service by doing research work in this direction. He has experimented upon different species of soft wood found in Burma and he maintains that some of the species would be serviceable to us. However the utilization of the species of wood is a matter for thorough investigation. At present we know that only "Himalayan spruce" and "Silver fir" are the species found fit for use. Let us hope, however, that the question of utilization of different species of wood in India, will become, some day or other, a practical commercial problem

As regards cotton-stalks, much cannot be said at present. Although the matter has not passed the final stage of experiment, yet it can now be safely said that the material would find its way to a paper mill in the near future. In cotton-growing provinces, at present, cotton-stalks are either burnt or wasted away uselessly. If these stalks are put to use in this direction, we shall certainly have a material gain. As an illustration of the enormous supply of cotton-stalks, I shall quote figures from the Local

Administration Reports for Central Provinces and Berar separately

The area under cotton in C P and Berar is as follows —

Central Provinces	12,28,632 acres
Berar	28,49,680 "
Total	40,78,312

As regards the utility of cotton-stalks for pulp making, I am doing at present many efforts. Two years back, I had sent a bundle of cotton-stalks to Mr Plymen, the Agricultural Chemist, Nagpur, for investigation into the suitability of cotton-stalk fibre for paper-making. And experiments were made by him which showed that cotton-stalks yield nearly 40 p c of cellulose. This percentage augurs a working of the material on a commercial basis. But to make sure, the Director of Agriculture and Industries, C P has despatched two tons of cotton-stalks to the Titaghur Paper Mill, Calcutta, with a view to make an experiment on commercial basis, which will give us certainly a clear idea as to the working of the material on a commercial scale. The following is the analysis of cotton-stalks as made by Mr Plymen —

ANALYSIS OF COTTON-STALKS BY MR PLYMEN

Cellulose	42.5
Liquis and Pectous substances	41.5
Moisture	10.5
Mineral matter	5.8

In America the question has already arrested the attention of the people and experimentists have already had certain conclusive results and Americans might have taken the problem in hand for practical solution. In this connection, the following table is worth a perusal —

Name	Acres under cultivation	Tons per acre per annum	Tons of raw material per annum	P C yield of pulp	Tons of pulp per acre	Tons of pulp per annum
Cotton stalk	1 00 00 000	0.54	45 00 000	55.4	0.15	15,00,000

ELEPHANT GRASSES

Now about the elephant grasses. Those are found scattered in certain localities of India and Burma. Many species were experimented upon by Mr Raitt, the well-known cellulose

expert. He concludes that, of all, the four varieties are extremely useful for pulp making. Particularly the two species (1) *Saccharum spontaneum* and (2) *Saccharum narenga*, which are found in Assam, make a fair grade of paper. Recently experiments on a commercial scale were made with Savana grasses, resulting in the manufacture of several tons of paper prepared from each species. Both species gave good results. The possible out-turn of these grasses in India is enormous, especially from Assam, Bengal, United Provinces and Burma and the cost of extraction is also normal.

A VARIETY OF GRASS ROUND CHINDWARA C. P.

I would also like to draw reader's attention to a species of grass growing around Chindwara in C. P. which, according to the Forest Economist, is next to Babil in quality and which has been identified by him as "*Pinesatum Alepocures*." The jungle which grows the grass is about 20 miles from the railway and is joined by a good road. Suitable site for a factory, says "The Indian Trade Journal" can be found two miles away from the railway and plenty of water is also available from a perennial stream. The quantity available per year would not be less than 18,000 tons. Shall I hope that capitalists in Central Provinces and Berar would take advantage of this opportunity?

A list of the names of other pulp grasses and the position of the tracts in which they are grown is given by Mr. Hole, Botanist, Forest Research Institute, in his preface to Mr. Raut's report, pages 1 to 9.

I have so far dealt with the various raw materials available to us in India, making a due reference to the particular localities which give us an enormous supply and my object is to point out indirectly the suitable places where, if gigantic efforts were made, paper and paper-pulp factories would probably be run successfully provided, of course, other circumstances favour us. In the successful maintenance of a factory, getting constant supply of material at a cheap cost is the governing factor. In his nice note already referred to, Mr. Syndall has given estimates based on reliable sources, as to the cost of getting bamboos and wood, at factory premises, presuming that a factory is located

somewhere near Rangoon in Burma. The statements are lengthy, I therefore, do not wish to take up the time of the readers but refer them to the note published by Mr. Syndall.

I concede that there are practical difficulties in the way of establishing pulp-factories in India, but they can be overcome with the co-operation and help from Government. The task is tremendous which shall have to be handled with tact, skill and patience.

DIFFICULTIES AND SUGGESTIONS

BOTANIST NECESSARY

The difficulties are—*Firstly*—The 18 kinds of grasses that are available for paper-pulp are grown in various forests all over the country in large areas. Even if we take forests of the Bombay Presidency—especially hills near Sukkar in Sindha, we find that various grasses are grown in large areas and the task of selection and identification of grass, will be a difficult business. A common man will not know the grasses useful for paper-industry and an Agricultural expert is the only man, who would be able to identify the grass. A Government Botanist is therefore needed, and we shall have to engage his services on an attractive salary.

SUPERVISION

Secondly—"Cutting operations" and "transportation of grasses from forests to factory premises," will be a troublesome business, as means of communications and roads are yet wanting. A very careful supervisor or a batch of men will be required to look after this work. He should be a man, who will not care for the hilly climate and should be able to bear the hardships that are generally to be met with by a man living in hills. Each kind of grass shall have to be stacked in different heaps to avoid confusion in pulping operations. We may approach the Government and the task will be found easier.

MEANS OF TRANSPORT, ETC.

As regards means of transit, etc., it should be kept in mind that in this respect Government help is absolutely wanted. The freight of transit puts a heavy and necessary burden on the factory and has a direct effect on the cost of production. The

difficulty is at present hampering the progressive working of the factory in India Government help is a grave necessity Let the Forest Department help the factories by way of giving expert advice, and permission to exploit the raw material in the forest at concession rates It is our common experience, that to take the raw material from forest to factory proves a most difficult and expensive task Let, therefore, facilities be provided to the factory concerning the construction of temporary roads from forest to factory, erection of store-houses, sheds, etc., in the forest, so that the difficulty may be minimised There is another adventitious circumstance that is harmful to the growth of industrial concerns in India

FREIGHT CHARGES

The freight charges on Indian-made articles levied by our Railway Companies are undoubtedly exorbitant and it seems, that the Railway Companies have a disdainful disregard for the interests of Indian industries This is a grave matter awaiting satisfactory solution at the hands of the Government

CHEMICALS

As regards the supply of chemicals, and other paper making materials, the present outlook is hopeless indeed We have the necessity to depend wholly upon the foreigners for the materials The instant they raise prices on these materials we begin to suffer Hence efforts ought to be made to develop our chemical industries The reason why the foreign paper sells cheaper in India, is that in foreign countries the chemical industry is so well developed that factories there get the chemicals very cheap The problem of chemical industry is hence intimately connected with that of paper industry They are so mutually interdependant upon each other that prosperity of one cannot be achieved unless the other is brought to the same level

MANUFACTURE OF COLOURS.

Similarly we need make vigorous attempts to manufacture our own colours and dyes and if proper attention is paid to the indigenous raw materials such as herbs, roots, etc., in which India abounds, it is just possible we

shall be in a position to manufacture our own colours and dyes which are so needed in every branch of industry

PROBLEM OF FUEL

The problem of "fuel" deserves attention. It is our fortune indeed that we have got in India some coal mines here and there But they are not sufficient to meet our present demand Hence efforts should be made, with the help of mining experts, in making a survey of all those provinces in India which lie at present unexplored, and it is probable that we would be lucky enough to discover some other coal mines in this or that province to our material gain Unless there be hearty co-operation between the Government and the people, we shall have very few hopes of achieving tangible results, in our efforts to place paper and paper pulp industry on a sound footing

The Ghat Electric Power schemes and the proposed Koyna Projects of Messrs Tata and Sons of Bombay, will solve the problem of power and fuel to a great extent Foundation of Paper-pulp Mills near the above works will be greatly advantageous to the proprietors and Messrs Tata and Sons deserve the thanks of the industrial public in this respect

PREPARATION OF SURVEY MAPS

Thirdly—Maps shall have to be prepared with Government help or by a Syndicate established for the purpose, which will show the position of chief grass lands in each division—with names of species which are dominant being recorded in each case Such maps will be obviously of great value in operations dealing with fodder supply and afforestation schemes and in such economic questions as the selection of sites for paper pulp factories and so on. Such maps have been prepared in U. P. under Government orders

SELECTION OF SITES

Fourthly—Selection of suitable site for pulp factory will be an important factor in the operations Factories should be established on suitable site near grass areas where there is ample supply of water which is absolutely needed in pulping operations. These mills should supply pulp to paper mills established in the plains

Fifthly—Before pulp-factories are established we shall have to first ascertain whether the pulp would secure a good demand in the country and whether the concern will be profitable.

Preparation of pulp is an art and we need export for the purpose. There are no facilities provided in the country to teach the processes of various manufactures and private mills may or may not allow apprentices to work in their factory.

NCESSITY OF RESEARCH INSTITUTE AND LABORATORY

There are Research Institutes established by Government at Dohia Dun, Pusa and Bangalore, but they are all occupied with Government work and will not find time to meet the demands of the public. The Bangalore Institute which is the outcome of the late Mr Tata's generosity, may be of some use. This is the position in India. Establishment of Research Institutes financed and managed by Indians is therefore absolutely needed in the country.

To carry out this purpose we shall have to build a good Laboratory and Research Institute equipped with all the necessary machinery and plant for both experimenting upon raw materials and for making experiment on a commercial basis. When it is once proved that a pulp-factory will be profitable, then any Company may come forward and undertake the concern.

PAPER EXPORT

A paper-pulp expert shall have to be ordered from Japan or England on an attractive salary. The expert should carry on the Research work and teach the processes of manufacture of pulp and paper to several apprentices who will be admitted to the Laboratory to learn the work on certain conditions. In a year or two, the Laboratory will produce a batch of pulp-makers who have completely mastered the art of pulp manufacture. They will have a great demand in the country when pulp-factories will be established in other parts of India.

- (1) Giving expert advice on all matters bearing on paper industry

- (2) Giving concessions to tap the raw material and facilities for their extraction.
- (3) Fixing concession rates of railway freight on Indian-made articles.
- (4) Patronising Indian mills, purchasing the whole quantity of paper they require from them.

WHAT FOREST DEPARTMENT HAS DONE

13 Help from the Government in the above directions, would without doubt, stimulate us in our endeavours to develop paper industry in India. It is indeed praiseworthy that Government are doing something substantial, especially through the Forest Department. In this connection I may mention particularly the names of Messrs Syndall, Pearson and Raitt who have contributed largely to the problem of paper industry. Mr Pearson, while speaking before the Indian Section of the Royal Society of Arts, London, on the recent industrial and economic development of Indian forest products, said—'The investigations of the Institute have shown, however, the possibility of manufacturing pulp on a commercial scale from bamboo areas in Burma, and also Savannah grasses in U P Bengal, Assam and Burma.' He was confident that both products will in future play an important part in the paper pulp industry of the world as they present no great difficulty in extraction. He anticipates that the industry will go forward when normal conditions are restored to the country. Mr Raitt also rightly observes, "a country producing not only the raw material in abundance but which also provides the important manufacturing factors of fuel and lime and also cheap labour, requiring no imports except comparatively small amount of chemicals, in these, I venture to say you have the foundation and essentials of success to a degree paralleled by few, if by any other, industries."

OUR TASK.

Every one who gives a thought to the problem takes an optimistic and equally cheering view. Ample supply of raw materials at our disposal, the Government showing fully interested, and ever ready to help us to the best of this power, now the

future solution of the problem is our task. It would be unwise on our part to remain contented by merely looking up to Government for light and leading. This is the fit time to come forward with capital and achieve something substantial in the field of industrialism. Let our capitalists, liberal-minded persons come forward to evoke the cause. Let us now be prepared to carry on the industrial crusade, and form Paper Trade Unions and combinations of Paper Factories in India. For if not now, then perhaps never. It may particularly be noted that Dominions Royal Commission and the Empire Resources Committee, Imperial Institute of London and other Committees have been formed in London and are working out several schemes. Lord Islington, the President of the latter Committee is reported

to have said that the whole trend of Holland Commission's enquiry was in keeping with the policy of the Committee and presumably if the Imperial Development Committee be now established, one of its duties would be to consider and make suggestions regarding the lines on which Indian Industrial Development should be pursued in the interests of the Empire.

The above needs no comment. To work actively and with co-operation, in order to achieve substantial progress is our immediate task. Let us then be up and doing something for our economic salvation "with a heart for any fate." Let ever our motto be "still achieving still pursuing" and, at the same time, let us "learn to labour and to wait".

BUSINESS HABITS.

By Mr S. Kabboor, B.A., F.I.A.A.

CONSCIENTIOUS service of the public is the surest way of success in business, and there are laws which govern business that must be observed equally with laws which govern a nation. A man who possesses a large share of natural astuteness with just the requisite degree of unscrupulousness may for a time evade the laws to the detriment of the lowest-minded man who adheres to the laws of business but that man may rest assured that the laws of business will, bring him before a tribunal, from which he will never escape at last, and his downfall is assured.

The laws of business are laid down by the Great Governor of all men with as much firmness and precision as the laws of the universe. If the conditions of individual success were the reverse of those on which the welfare of the community depends, then the interest of a man of business and the public would be opposed to each other. But they are, in fact, coincident. The man who attains success deliberately by postponing the service of the public to advance his own interest climbs in an unenviable and

precarious elevation. The supplemental virtues which may be linked to business are shrewdness, astuteness, firmness, energy, and push. Shrewdness is an instinctive wide-awakeness. Never over-reach or be over-reached.

Firmness may be often considered irritating to persons void of business habits. Business cannot be adjusted to the comfort of unbusiness-like people. Business is not merely a sphere for the action of truth and firmness, but also for the mooring negligence and a happy-go-lucky improvidence, of industry, and concentration, over-indulgence and meanness. Business demands high triumph over muddle-headedness and thoughtfulness and a brisk energy—Strong activity, conscientious intelligence, foresight, insight, promptitude and regularity, prudence, caution, judiciousness, and vigilance—all these virtues must be acquired to some extent by the man who yearns to make himself a success, and every one of them applies to the insurance profession as any other business and the same laws of business as were set forth are worthy of your earnest consideration.

HOW TO DEVELOP INDIAN INDUSTRIES.

By Mr. P. K. Menon, B.A.

WITH the dawn of peace after a continuous and devastating world war of nearly five years, we see that the attention of all right-thinking men is drawn to the field of the economic and industrial reorganisation. This reason is indeed obvious and needs no great explanation. Not only the nations that have suffered greatly in the war but also those that were more fortunate are busy planning new schemes for their commercial and industrial advancement to go ahead of those that had profited at their expense. We can reasonably expect to see in the near future a keen competition between the great powers.

In this commercial war, India also will have to bear her share. She cannot wait with folded arms and rest content with importing articles of daily necessity from outside, articles that are manufactured out of the raw products that she exports. Already there are signs which are in no way discouraging, which show that Indian capitalists too are alive to the needs of the situation, though they have hitherto failed to take full advantage of the opportunity. India is a land of immense possibilities, with abundance of raw materials, the extent of which has not till now been determined. Her resources have greatly been exploited by foreigners, while her own children were content with what was left. It is time that the Indian capitalists turn their attention to this pressing need of India for her material advancement.

The defect of having to depend upon foreign countries for manufactured goods of daily necessity became apparent during the days of the war, as many causes contributed to make the supply less and difficult to obtain. Though peace has now been apparently established in Europe, things have not reached the state of pre-war days and it is to be thought that some more time must elapse before normal conditions are finally restored. An attempt was made to manufacture in India such goods as were possible, but being handicapped complete success could not be had. It is, at the same time deeply gratifying to note that Indian industries in general have received a great impetus during the war.

Is it possible for India to become a great industrial country? Has she got the things absolutely essential for it at her own doors? Coal and iron are supposed to be the most essential things for an industrial country. India is not at all poor in this respect. Her coal and iron mines give promise of a bright future and capitalists have no reason to be anxious about these. Besides, the water power of India, is a thing which is even now unestimated. There is much evidence to show that if the water power in India be properly developed, it will be of immense help to the industrial development. It is a happy sign of the times that the Government are now trying to take an estimate of the possibilities of India's water power.

Economists are unanimous in maintaining that Indian labour is cheap and abundant. But it is stated that though the labour is cheap, it is ignorant and the cheapness is thus compensated for. We cannot expect these labourers to remain ignorant always and when once they are given the proper training, they will become good labourers and will be a match for the labourers of the other great industrial countries.

It used to be commonly said that Indian capital is shy and not forthcoming. But this cannot be taken as applicable to India as a whole at the present day. Indian capitalists are rising up to the occasion. During the last four or five months many large companies have been floated with Indian capital and under Indian management. They have learned by bitter experience what their money could have earned for them, if only they had made a proper use of it from early times. But one does not find the same great activity as could be found in the other great capitalist countries. All over India there are big Zamindars, who might invest their money in industrial or other profitable concerns and who for the most part do not interest themselves in the matter.

Before concluding, I would like to mention one or two difficulties that beset the Indian capitalist. It is very difficult to get expert opinion. In most of the cases, he has to

fall back upon foreigners to guide him sometimes even at a prohibitive cost. This foreign dependence has its own drawbacks. A still greater difficulty is the want of up-to-date machinery. Instead of trying to manufacture the necessary machinery in India, people have to import them from foreign countries, thus abandoning one of the great fields of industry. In many cases it is not possible to get just the machinery that we want. If fortunate enough to obtain the necessary machinery, the owners generally fail to keep pace with the improvements that are effected in them from day to day, but soon the usual routine with their old apparatus in the light of the improvements that have been made in other countries, makes it unable to hold its own in the competition.

I would like to invite the attention of the

Indian capitalists to this aspect of the question. They would be doing a great service to themselves and to India if they try to invest their capital for the manufacture of the tools and plants that are required for the various industrial concerns. If all the necessary machinery had been available in India itself, the industrial aspect of the country would have been entirely different, for, during the war, she could not get the proper things from abroad and many industries which would otherwise have developed, had to rest content with a far less, and in many cases, inferior output. The manufacture of machinery is the prime need of India in her industrial regeneration and I would appeal to the great capitalists to turn their attention to this sphere, for, to make India self-supporting in this field would itself be a great step towards her industrial advancement.

COTTON AND COTTON SEED INDUSTRIES

By—R. K. S.

THE instructive address delivered by Mr. E. C. de Segundo before the Manchester Textile Institute on May 28, 1919, deserves the careful study of cotton growers and cotton manufacturers in our country. It is familiar to every one that the cotton seed was regarded as quite valueless till about the year 1860, when its economic importance was recognised. The value to the United States alone of this once waste product was, just before the war, with an average cotton crop, from twenty to thirty million pounds sterling.

Some 95 per cent of the seed utilised retains however, residual fibre to the extent of from 2 per cent in lightly filled Indian seed to 12 per cent of the seed-weight in American Upland, Uganda and other woolly varieties. This residual fibre is comprised of the "fuzz" proper, some "staple" that has escaped the gin, and other fibres too short to be included in "staple" and therefore called "linters". Each of these products has now a large market in continental countries.

For some time past the "linters" were recovered by saw linting machines and were mainly marketed in Germany. But the successful removal of the "fuzz" was a more difficult

problem as it had to be accomplished without any injury to the seed or to the short fibres. The potential value of the "fuzz", it appears, has long been recognised but the attempts to separate it at first gave a product marked by the defect admixture with pieces of seed-shell and foreign matters. Since the year 1909 a machine has been in use which separates "fuzz" in a clean, marketable form free from this defect. Before the war 2,000 tons of the short fibres were imported into Britain for paper-making and during the war 8,000 tons of this "hull-fibre" have been used by one United States firm alone, in making explosives.

In America the residual fibres are removed in three stages. Some 2 per cent (i.e., 15th per ton of seed) is recovered in the saw-linting machine as "linters", about 3 per cent (i.e., 67th per ton of seed) in the seed-defibrating machine as "seed-lint", while some 12 per cent (i.e., 112th per ton of seed) is obtained in the hull-defibrating machine as "hull-fibre". All these products now command very high prices, but calculating on a pre-war basis the three grades aggregate to 44 shillings per ton of seed, if the cost involved is about 10 shillings per ton the net return will be about 34 shillings or roughly Rs 25 per ton of seed.

In Great Britain the entire seed is crushed before the residual fibres are separated. Even then the recovery could be effected, although not so satisfactorily, in the oil-milling operation.

But the advantage would be greatest if defibrating the seed is conducted in the country of origin. Apart from the profit on the "linters" and "fuzz" the diminution in space occupied by the defibrated seed will bring in a saving of not less than 25 per cent in ocean freight. Also the defibrated seed would fetch a better price than the "fuzzy" seed while

the liability of cotton seed to heat during the voyage being diminished there will also result a reduction in insurance rates. It has been calculated that at pre-war rates these factors taken conjointly would mean an increase of 50 shillings per ton in the prices for Uganda seed and about 10 shillings for the Indian seed.

Therefore cotton growers in our country must try their best to cultivate the more valuable worthy varieties while the exporters must direct their attention to utilise the residual fibres to the best advantage.

EXPERIMENTAL FRUIT-PRESERVING FACTORY.

THE following note concerning the Experimental Fruit-preserving Factory at Coonoor has been prepared by the lady manager —

Fruit-preserving, whether in the form of jams or otherwise, is particularly women's work and it is desired to establish this industry in this Presidency on a firm basis of knowledge and technical skill, whether as a factory or as a domestic business.

To this end Government have sanctioned a factory for the Nilgiris in which organised experiments will be made and fully recorded, including an enquiry into the fruits at present available on and near the hills, into the varieties most suitable for preserving, into the most acceptable preparations and combinations of the several fruits, and into the best methods and recipes. During the past four months this work has been initiated at Coonoor on a domestic scale pending the establishment of a factory with modern plant, and the preserves exhibited are samples from the early experimental work carried out by the lady expert in charge.

The present samples are put up in glass bottles partly because these were the only containers which will display the goods, partly because suitable tin containers and labels are not yet available.

It has been ascertained that a considerable variety of suitable fruits is available though not as yet by organised cultivation. Such are the orange (seville and sweet), the Guava (ordinary, hill, and strawberry), the Pear,

especially the common "stone" type, the Papaya, Tree Tomato, ordinary Tomato, Bilberry (*Vaccinium leschenaultii*), Bilimbi (*Averrhoa carambola*), Tipari (Cape gooseberry), Peach, Quince, Rhubarb, Granadilla and Banana. Apples and plums are at present too scarce and dear for jam manufacture, but can be readily grown. Sample preserves from most of these fruits are here shown.

It is evident that even with these fruits great variety is possible by preserving them singly or in various combinations and proportions, or with different amounts of sugar, or in various preparations such as jam, jellies, cheeses and butters, fruits in syrup, crystallised, etc. At present about 40 recipes have been found successful, of which the results of about 36 are here exhibited. A still greater variety is possible as other fruits become available and when the several fruits are secured in larger quantities, more regularly, and for longer periods so as to admit of more complete treatment.

The supply is at present both precarious and casual and would not suffice for even a moderate sized factory, much is obtained from the jungles and from casual fruit-tree growth, few regular orchards exist, and it is obvious that no organised Fruit-preserving Industry can depend on such supplies. Hence this industry depends ultimately upon a Fruit Growing Industry which is now to be organised and developed throughout the Nilgiris.

INDIAN STATES.

Industries in Travancore.

WE give below a few of the important schemes sanctioned by H H the Maharajah for the Department of Industries in his State —

PAPER-MAKING

The raw material exists in large quantities, the chief being linseed stalks which can be acquired in the linseed-growing districts for the cost of collection, as it is stated that some 10,000 tons annually are practically wasted. The cost of transport on the other hand is a more serious matter and comes to a good deal more than the cost of the raw material at its point of origin as the stalks are light and bulky. Here again, therefore, the site of the factory will be conditioned to some extent by the proximity of the raw material. Fuel and particularly water are prime factors in the situation, and accessory materials play a more important part than in the production of alcohol. These materials are chemical reagents such as caustic soda, bleaching agents such as chloride of lime, filling material such as China clay and sizing material such as glue or starch.

The supply of these accessory materials at the most profitable rate will probably involve the starting of further new local industries, e.g., the production of soda and bleaching liquor by the electrolysis of brine, which latter exists in quantities at present unknown in the neighbourhood of Raichur. Glue and starch can probably be manufactured locally, and possibly there may be deposits of suitable filling material such as China clay. It will be seen, however, that in the paper industry the question of accessory materials requires careful examination. The market again is not so unlimited as in the case of alcohol and is at present measured by the quantity of paper imported into the State.

BAMBOO INDUSTRIES

The cottage industry to be aided is the bamboo, mat and basket industry of North Travancore. This as an industry that is badly in need of development and is situated chiefly in Alwaye Pakuthy. The Pulayas have a hereditary industry and about 20 families are engaged in basket-making. The baskets are made of reed, cane, bamboo and acra. The

weavers live in dire poverty under cadjan roofs standing on four posts and are generally filthy. They buy bamboos for a few chuckrams and then they go home to weave them into baskets. The men split the bamboos and the women do the weaving. The finishing is done by men. After one-and-a-half days one basket is made and for this six to nine annas is received. The method of sale is haphazard. If local people care to buy them it is sold. If not they wait at the railway station to sell. If unsold they must starve or sell it to the food merchant for a price below the actual value, and this is often done. Thus they are always in the same state of poverty. Recently an attempt has been made to export the baskets. They are of hand bag pattern. This has met with success and export to other parts of India has been done with our help. The total earnings of a worker in constant work are Rs 7 per month. This could be enhanced and the people kept in constant employment, if the industry was organised properly. Here again is the necessity for a Co-operative Depot for the cottage industries highly evident. At the present time these baskets are cheaper and superior to the Japanese articles of the same type on the market, and they need a wider field and advertisement. A depot for instruction in new patterns and collection of goods, etc., on the general lines indicated in our report would be a great boon. Good cane baskets realise Rs 2 to Rs 3, whilst others vary in price up to Rs 1, if made of bamboo six to eight annas is the average price. The Government have sanctioned the opening of a depot here on similar lines to that at Eraniel for weaving.

JAGGERY

A demonstration jaggery factory, which will later become a sugar factory, has been sanctioned for Eravipattu near Thiruvella. The machinery is ordered and will be installed and working before next season.

MATCHES

A match factory to make use of palmyra leaves and splints has been opened in South Travancore. An expert has been appointed and is now working. Before some three months are over some thousands of people will be working in connection with this as a cottage industry.

THE LAC INDUSTRY

At first sight it might be thought that the consideration of the lac industry was futile inasmuch as practically no raw stick lac is grown in the State. On the other hand the conditions for its successful manufacture are entirely different from those discussed in the preceding cases. Here we have a raw material of great value and its cost of transport negligible in comparison. The most necessary accessory material in the working up of lac by modern methods is alcohol, and this is exceptionally cheap. There is practically an unlimited export market for lac, as it is used in the manufacture of hats, of varnishes and of gramophone records. In the State itself large quantities can be used for varnish and for

making the customary small round hats so largely worn. The cheapness of the accessory material and the large market for the finished product are the governing factors in this case.

MATCH-MAKING

This case differs entirely from the other. It is by no means certain that wood of suitable quality will be obtained from the State forests, certainly it cannot be obtained as cheaply as the pine-wood in Sweden. Moreover all the accessory materials such as phosphorus, sulphide of antimony, sulphur, etc., have to be imported and finally the whole present consumption of matches by the State is not more than a small proportion of the output of one typical English factory.

Industrial Development in Hyderabad

DR GILBERT FOWLER, Professor of Chemistry, Institute of Science, Bangalore, has written the following note on the Industrial possibilities of the State —

NEW POSSIBILITIES IN INDUSTRIES

Apart from the consideration of the establishment locally of well-known industries, or of their suitable modification, is the development of entirely new possibilities. This involves a search for new materials or for paying quantities of material already known to exist. Thus, *e.g.*, small quantities of natural oil, of alkali and of salt are known to occur in certain portions of the State. Careful scientific prospecting is necessary before the possibilities can be properly assessed.

Large quantities of various non-ochres occur, but whether these can be profitably used for the manufacture of plants, demands careful investigation possibly with the assistance of firms having special experience.

There are many forest and agricultural products which have only been superficially investigated, such as numerous textile fibres, resins, dyes, etc. The investigation of all these new possibilities is part of the function of a Department of Industries.

CONTROL OF INDUSTRIES

In addition to working out the preliminary stages of new industries, the Department is also concerned to watch over at any rate the actual conduct of an enterprise for some time after its launching.

In some cases it may be found best for the department actually to run the industry for some time until its success has been thoroughly demonstrated and afterwards to hand it over to the most suitable applicant who may be willing to take it up.

In any case it is desirable that sufficient control be exercised by the department to ensure the maintenance of a high standard of quality in the products placed upon the market.

The importance of the maintenance of the standard of quality was indicated early in this note, it is really the key stone of a modern industrial enterprise. The too frequent adulteration or lowering of quality which occurs in this country is not only ethically bad, but extraordinarily foolish. Instances could be multiplied where good openings for trade arose in consequence of the war and were lost through the poor quality and frequent gross adulteration of the goods supplied.

Control by the Department will be welcomed by industrialists when they realise that its object is their help and encouragement, and it will become more a matter of co-operation, than of mere criticism and restrictive action

WORK ALREADY ACCOMPLISHED BY THE DEPARTMENT

At the outset the need for a research laboratory and scientific staff was realised and steps were at once taken in this direction. A laboratory for research on industrial problems and for general chemical work in connection with them has now been started and equipped with a staff of young chemists specially trained in the Indian Institute of Science, Bangalore

The higher officials of the Department who were subsequently appointed possess between them technical knowledge of a large variety of subjects, among which may be mentioned actual practical experience on the following lines —

(a) Inauguration and management of large works in India, in England and in other countries

(b) Practical commercial experience both in England and in India

(c) Knowledge both theoretical and practical of mechanical and electrical engineering including manufacture and working of machinery

(d) Theoretical and practical knowledge of the oil and fat industry including the manufacture of soap and glycerine and candles and the preparation of edible and industrial oils

(e) Manufacture of alcohol and allied fermentation products

(f) Technical extraction of resins

(g) Theoretical and practical knowledge of pharmaceutical chemistry

In addition to special knowledge in the above directions the staff possesses a general acquaintance with metallurgical industries, with the paper pulp industry, and with the textile industry, the manufacture of tanning materials, the manufacture of essential oils and sundry minor industries.

The potential resources both vegetable and mineral of the State of Hyderabad are enormous. For their proper development modern methods intelligently directed are required

and for these a bold financial policy is indispensable. In modern industry it is necessary to spend money in order to make money

The Government of H. E. H. the Nizam comments as follows on the above report —

A perusal of the note by Dr Fowler which refers principally to modern industries will, it is hoped, bring home to the public the difficulties and complications involved in the inauguration of large scale industries, and the authority of Dr Fowler will, it is believed, convince them that the final stage of industrial development, i.e., establishment of factories, which the public are so eagerly looking forward to, can only be reached after slow and patient work on the preliminary stages of research and investigation. Any hasty or rash action is bound to end in failure and waste of money, and greatest of all, failure in a single venture would result in a general set back and loss of confidence, which would be highly prejudicial to the industrial and economic interests of the State. Government are therefore determined, *in the interests of the public* no less than their own, to advance cautiously on sound lines even though such a policy might expose them to the charge of being slow. At the same time Government are resolved to spare no trouble or expense in thorough preliminary investigation, and in the case of promising industries all their resources will be freely utilized to develop them up to the stage when they could be safely handed over to the care of private capital and private enterprise

Lastly, Government take this opportunity to note with gratification that notwithstanding serious and unusual obstacles, the Department of Industries and Commerce has done much pioneer work and the way has been prepared for the establishment of factories in due course. Now that the war is over, and the Director of Industries and Commerce has returned from a tour in America and England with full particulars regarding machinery, etc. Government hope to see more rapid development in the directions, which the research and investigation so far carried out by the Department have shown to be profitable, and of which Government will keep the public duly informed from time to time.

TOPICS OF THE TIMES.

AGRICULTURE.

Indian Sugar Commission.

ON November 20th, the Indian Sugar Committee inspected the factory of Purtabpore and Co, Ltd, Purtabpore, Gorakhpur District. Mr A L Turnbull, the General Manager of the Purtabpore Co, in his evidence before the Committee stated, that sugar cane was probably the most important crop in his neighbourhood, but there was a great deal of very poor sugar cane grown. This was due to the fact that much of the cane was planted by men who were not regular cultivators, on unsuitable land. The consequence was that in recent years the district had been greatly troubled by the ravages of the borer moth, which was most active in dry years. The cane generally grown was the hemja variety. He had made experiments with many other varieties, but they had not been satisfactory, and he considered that canes of the Mauritius and Java types were unsuitable for the tract. There was no better rotation crop for cane than indigo. Cattle dung and indigo refuse were the best manures for sugar cane, and he thought that it was out of the question to attempt to supply the native cultivators with artificial manures. He thought there was scope for the introduction of small steam plants for crushing cane, through Co-operative Societies and agricultural banks. He considered that each central factory should have a considerable zone of its own in which to moderate, when cane was bought on the basis of the value established by the Gum market. Payments by Sucrose content was not a practicable method, or one likely to find favour with Indian cultivators. It might be a success in a district in which cane was being introduced as a fresh crop. He considered that the cultivator should be paid for his cane at the central factories, on a basis of what he would get for it—less his expenses if it were turned into Gur. Advances and contracts were not successful methods of arranging supplies, as it was impossible to tell beforehand, when such arrangements were being made, and what the cane would be worth.

Prices of Food-Stuffs

In the course of a resolution issued this month the Government of India draws attention to the Hon Mr K K Chauda's resolution moved in Council last September and says that they do not think it necessary to comment at length on the report of the Food-stuffs Commissioner. As pointed out in the report, the Government of India up to the date of the outbreak of the war had always refused to adopt a policy of restricting the export of food-grains from India. The abnormal circumstances created by the war compelled them in common with the Governments of almost all countries in the civilised world to resort to an expedient which in ordinary times is open to strong objections. Although the extraordinary high level of prices still prevailing in India makes it impossible for them at present to remove the embargo on export they are fully alive to the necessity of allowing as soon as circumstances permit the export trade in food grains to resume its normal course. A beginning has been made in this direction. It has already been found possible to withdraw either, wholly or partially, the notifications prohibiting the export of certain food-stuffs, such as onions, potatoes and chillies. The Government of India have already announced their intentions regarding the export of wheat, gram, jowar, bajra and various other kinds of grain and pulse, and they hope shortly to be able to make a statement on the subject of their rice policy in 1920.

The report of Mr C A Innes, the Food-stuffs Commissioner, concludes as follows.—There is one other remark which I must make before I close this report. We have just passed through the worst crop failure India has experienced since the famine of 1899-01. The crop failure was complicated by other factors to which I need not refer again, and the prices of food grains were 100 per cent higher than in 1900. Nevertheless, nothing has impressed me more in my numerous tours round India than the comparative absence of visible signs

of distress and the apparent ease with which the people stood up to the unprecedented level of prices. The same fact is commented upon by more than one Director of Agriculture. In the season and crop reports for the year 1918-19 prices were nowhere higher than in the Central Provinces, yet the report records that distress was nowhere really serious or severe and that the agricultural population had come through the period of anxiety extremely well—the report for the United Provinces bears similar testimony. The agriculturists weathered the season without much apparent difficulty, and over a great part of the provinces it is said a degree of protection seems to have been attached which removes the worst danger of a failure of the rains. Famine and scarcity were declared in numerous areas and all the usual measures were taken. It would not have been surprising if the circumstances of this disastrous year had been reflected in famine returns, but as a matter of fact the numbers on relief were never very large. In 1900 the maximum number on relief at any one time was 6,32,211. In 1919 it was 565,348. In the five years rupees were absorbed in India at the rate of 20.08 crores per annum as compared with an average of 8.78 crores in the preceding quinquennium. As pointed out by the Hon. Mr. Munt in his speech in the Legislative Council on the 17th September the balance of trade is deduced from the excess of exports of merchandise over imports minus private imports of Treasuries and Council Bills was against India in the five years ending 1913-14 to the extent of 23 lakhs per annum. In the five years of war the balance in India's favour averaged 20.80 crores per annum. These figures point to an increase of wealth in India, and the history of the year, which is just over, indicated that no small portion of this wealth has passed into the hands of the cultivator. At any rate the most hopeful feature of a year which otherwise was disastrous is the clear evidence it affords of India's increasing power to withstand a crop failure.

Cultivation of Plantains.

I do not think that those who are engaged in the cultivation of the above product, ever give a thought to the fundamental principle which governs the proper cultivation of one of

the most popular and wholesome fruit, that can be grown all throughout the year. Quantity and not quality is the chief aim of the big cultivator, while no desire, to improve the quality, flavour or size of the fruit is thought of, hence, we find in the market an undersized insipid lumpy unripened type of plantain— invariably harvested before the proper time. It is worthy of note that of all the fruit trees in the *World* the plantain tree yields the largest produce per acre and brings in a *very* profitable return. Another point is that fruit experts declare that the chemical constituents of the plantain fruit are precisely the same as those of milk, and that the plantain is the *most* nutritious and *most* easily digested of all fruit.

The writer of the following few simple hints wishes to state that he does not want to pose, as some great Scientist, propounding some new theory, but is desirous of arousing the interest of cultivators and those interested in this particular product and to draw the kind attention of those interested in fruit culture in general, especially those most interested in this most popular fruit, who *may* have followed the hints herein mentioned, but in an indifferent manner, and not to its entirety, and also those who are in search of a hobby, who might, with advantage, improve the cultivation of the few trees growing in their own compounds.

It is a matter for regret, that in a place like Bangalore, where there is a large military and civilian population and plenty of boarding schools, that one is only able to procure, with great difficulty, only the commonest variety of plantain, known as the acid plantain, or Poovan as it is called in Tamil, when with a little trouble, a little interest and a little extra expense one can grow a *number* of varieties of better size and flavour with greater profit to the grower.

The plantain tree commences to bear fruit about the 10th to 12th month. When the fruit commences forming, it would be noticed that the inflorescence reduces in size by degrees, this inflorescence hanging on should be cut off and a fairly heavy stone, about the size of half a brick should be tied at the cicatrix. All suckers should be dug up and planted elsewhere. This should be kept up and not one sucker left when the tree is in bearing. Care should be taken when digging up the suckers,

not to injure the parent tree. All the nourishment that hitherto was taken up by the suckers will now be transmitted to the bunch of plantains and the weight of the stone as previously mentioned, will help to further draw all the nourishment down to the hanging bunch. When the plantain tree is three months old the following mixture, which is the quantity for 50 trees, should be applied round each tree—

Castor cake	25 lbs	Bone meal	20 lbs
Nitrate of soda	20 „	Wood-ash	15 „

The last named can be continuously applied about 2lbs to each tree once a month, this can easily be collected from the fire-place in the kitchen for those who are experimenting on a few trees, of course. The writer feels confident that, if the above few simple hints be followed in their entirety and the trees manured with the mixture recommended, anybody who tries it will be amply rewarded for his trouble. The trees should be watered regularly, morning and evening, before the sun rises, if possible, and after it sets—*The Planter's Chronicle*

Artificial Manures.

RESULTS OF BOMBAY TESTS

THE Department of Agriculture, Bombay, has issued a Bulletin (No 89 of 1919) describing the experiments on the value of artificial manures for crops in Western India.

Tobacco.

CONDITIONS—On the Deccan, with irrigation in reserve to use if the rains are insufficient and with land in fairly good condition.

DRESSING—	lbs
Sulphate of potash	150 per acre.
Superphosphate	112 „
Nitrate of soda	245 „

This will pay if it costs less than Rs 65 per acre.

Potatoes.

CONDITIONS—Applied on the Deccan to the crop in the “rabi” season with irrigation.

DRESSING—In addition to the farmyard manure usually given

	lbs
Sulphate of potash	150 per acre
Superphosphate	112 „
Sulphate of ammonia	120 „

Cotton

CONDITIONS—The rainfall must be regular and reliable practically during the whole of the growth of the plant up to flowering.

DRESSING—Either of the following methods—

- (1) (a) two tons farmyard manure per acre, ploughed into the land before the seed is sown,
(b) two hundred lbs superphosphate per acre put in along with the seed,
(c) one hundred and thirty-five lbs of nitrate of soda or one hundred lbs. of sulphate of ammonia topdressed six weeks after sowing.
- (2) (a) two tons farmyard manure per acre ploughed into the land before the seed is sown,
(b) a mixture of 200 lbs of superphosphate and 125 lbs nitrate of soda or 100 lbs of sulphate of ammonia put in with the seed.

Sugarcane.

CONDITIONS—Good thick canes on well prepared land with abundant irrigation in the Deccan.

DRESSING—

- (1) Thirty-five cartloads of farmyard manure with 224 lbs. of superphosphate and 300 lbs of sulphate of potash to be applied before the field is ridged up for planting.
- (2) One thousand two hundred lbs of a good quality of safflower cane or the equivalent quantity of another cane, and 375 lbs of sulphate of ammonia to be applied at the time of earthing up the cane.

Chillies.

CONDITIONS—Irrigated chillies in the Deccan.

DRESSING—In addition to the ordinary local dressing of farmyard manure usually given—

	lbs
Sulphate of potash	180 per acre
Superphosphate	112 „
Sulphate of ammonia	60 „

or

Nitrate of soda	75 „
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This should be applied as a topdressing to transplanted chillies about one month after transplanting the chillies.

Onions.

CONDITIONS—Land should be in good condition and the onions transplanted must be healthy

DRESSING—In addition to the ordinary dressing of farmyard manure of, say, 20 cart-loads or 9 tons per acre—

	lbs
Sulphate of potash . .	56 per acre
Superphosphate	112 „
Nitrate of soda . .	25 „
or	
Sulphate of ammonia	25 „

This should be applied to the transplanted crop

* * *

Bananas (Plantains).

CONDITIONS—On the Deccan or near Bombay

DRESSING—

Castor cake	1 to 1½ lbs
Sulphate of ammonia	½ lb
Sulphate of potash	7/10 lbs
Superphosphate	½ „

This mixture may be used either as a complete dressing when the full quantity indicated should be applied to each plant in three doses at monthly intervals, commencing one month after planting. It may also be used, without oilcake, to supplement an organic manuring with farmyard manure of poudrette at the rate of, say, 2 lbs per plant applied in two equal dressings, respectively, one and two months after the planting of the plantains or after the suckers commence growing independently.

* * *

Agricultural Enterprises

British agricultural engineers are taking certain definite steps to secure the increased production so essential to meet foreign competitors with success in all the world's markets.

To a certain extent the moulders' strike has interfered with the progress of the different schemes in hand, but this is regarded as a temporary matter only, and cannot seriously upset the plans conceived

In the first place, mass production and scientific salesmanship are being adopted almost all round. It is not untrue to say that with certain notable exceptions British agricultural engineers were not up to date in actual engineering practices before the war, nor did they appear possessed of a surplus of initiative. The war seems to have changed all that, and it may not, after all, prove entire loss that many firms were compelled to manufacture munitions, for it got them out of ruts by giving them an opportunity of demonstrating what they could do in other directions than the old standard lines. One result is that to-day agricultural engineering is invested with a new vitality.

Standardisation is the great keynote of trade plans to-day. Certain amalgamations have taken place to secure this end, and they represent powerful forces in the struggle, while, apart from these, there are many working arrangements being entered into. The feature of the whole situation is that where a firm cannot manufacture a side-line on mass production methods, and its continuance interferes with successful concentration upon the leading lines, agreements are being entered into by firms possessing a working understanding, and each particular house is becoming freer every day to specialise in given articles.

The vital thing, however, is that results to date show to the British agricultural engineer he can favourably compete with the best American house price for price, and certainly quality for quality.

The tractor industry had the handicap of an enforced belated entrance into the field. Elsewhere there is an optimism born of the knowledge that, given adequate support by labour, the British firms have inviting prospects. At least five of the largest firms have arranged to increase their output tenfold during the coming year, and others, having beaten the Americans on price for their heavier lines, particularly in farm power oil-engines, are now determined to do the same in the smaller categories. The spirit of industry in this branch of engineering, therefore, is now very much alive.—*Times*

INDUSTRIES.

British Industries Fair of 1920.

THE British Industries Fair of 1920, which will be held from February 23 to March 5, will be on a scale commensurate with the magnitude of British industry and the largest yet held. Though there will be three fairs in different towns—London, Birmingham and Glasgow—they will in reality be only separate sections of one big Fair. At each of the five preceding fairs held in London, firms who were mainly engaged in the production of war requirements were prohibited by the Board of Trade from exhibiting.

The Board of Trade has arranged that in each of the three sections there will be different groups of industries, in order that buyers may not have to go to more than one Fair to purchase the goods they require. Exhibitors have been called upon to send in to a special list of the Board of Trade the names of the *bona fide* trade buyers they wish to invite, and these names having been collated and indexed, about 100,000 invitations will be issued for the London Fair alone.

The London Fair will be held at the Crystal Palace, which is the largest exhibition building in the world. The trades that will be represented at the Crystal Palace are—Cutlery, silver and electro plate, jewelry, watches and clocks, imitation jewelry, including handkerchief-dashery articles, glassware of all descriptions, china and earthenware, paper, stationery, and stationers' sundries, printing, fancy goods, including travelling requisites and tobacconists' sundries, leather for the fancy goods, bookbinding, and upholstery trades, brushes, toys and sport goods, scientific instruments, optical goods and spectacle wire, photographic appliances and requisites, drugs and druggists' sundries, musical instruments, furniture and art needlework requisites.

German Dye Industry.

The eight German chemical companies which since 1916 have formed the enlarged community of interests in the heavy chemical industry, including the production of aniline dyes, have convened special meetings of the shareholders in order to submit proposals for increasing the share capital. Apart from new preference

capital, which is to be interchanged between the companies so as to render their relations of a more intimate character and fortify their competitive capacity in external markets, the aggregate amount of the combined new issues of ordinary capital is 389,000,000 marks, which would represent £19,450,000 if the mark were at its normal value. In fact, each company is virtually to double its ordinary capital.

The proposed increases in the ordinary share capital, which are to be taken over by banking syndicates and then offered to existing shareholders at 107 per cent are to be made in instalments, partly this year and partly during next year.

The Industrial Court Bill.

In the Commons, Sir Robert Horne moved on November 6th the second reading of the Industrial Dispute Bill, which was passed unanimously, the features of which are—Provision for a permanent Industrial Court of Enquiry and the dropping of compulsory arbitration existing under the present Act, the Bill also provides for the continuance of war time rates of wages till September, 1920. The reason why compulsion had been dropped was that the employers objected to the clause empowering the workmen to compel the employers to accept arbitration in wages disputes, and to abide by the decision, whereas there was no corresponding compulsion on the workers to abide by the decision. Labour objects to being made the subject of compulsory arbitration, hence it had been dropped. Sir R. Horne, however, defended Labour against the suggestion, that the objection was because they desired to evade the awards. He pointed out that in the last eleven months the *interim* Court of Arbitration decided 863 cases, and only in three had there been a strike against the award. Moreover, he declared that compulsion had largely failed in Australia and Canada because, in his opinion, the people were not ready for it.

Aniline Dye-stuffs.

A Geneva correspondent writes that the exported aniline dye-stuffs in the first six months of 1919 amounted to 2,903 tons, against 2,794 tons in the first six months of

1918 This increase came quite unexpectedly Great Britain was the chief buyer, having bought 30 per cent of the Swiss export The next buyers are France, who took 21.1 per cent, Italy, 13.2 per cent, and the United States, 12.0 per cent The export of pharmaceutical goods, which are made by the same factories, increased by 48 per cent during the first six months of 1919 compared with the same period of 1918 Countries like Poland, Bohemia, Austria, and Scandinavia, in which German products had a monopoly before and during the war, address the Swiss industry

Swiss chemical manufacturers are convinced that those competitors of Germany who developed their production during the war on a really scientific basis, will not have to fear Germany's competition In Switzerland it is only the restless abusers of the lack of German goods who brought worthless substitutes on the market, who will have to suffer from Germany's recovery after the war Those manufacturers who started the production of German specialities, systematically and scientifically developing their pre-war production, view quite calmly the future struggle

Commercial Outlook in South Africa.

Leather goods are in strong demand and prices of both local and imported leather show an upward tendency Boot and shoe manufacturers throughout the Union are exceptionally busy Stocks are low, especially in children's footwear One large firm anticipate trebling their output within the next few months by the installation of new machinery Makers of the machinery are sending out experts to train operatives here, and the consequent improvement in the finish, it is anticipated, will result in a larger demand for the South African article There still exists an acute shortage of skilled labour Harness makers are fully employed and can do with more hands than are at present available

Clothing factories are unable to cope with the present heavy demand Prices are advancing and there is little immediate prospect of the present low stocks of cloth being augmented by supplies from overseas While there is an increased call for the better class goods, inquiries for cheaper grades are comparatively

few, and it is unfortunate that the quality of cloths now arriving from the United States is poor, this being the trade's chief buying ground at present, owing to the inability of the English mills to undertake orders Spinning and weaving operations are being started in Cape Town shortly, and clothing manufacturers hope to be able to purchase supplies of locally manufactured cloth at prices considerably below those ruling to-day for the imported article — *Monthly Review*, Cape Town

A Cure for Industrial Unrest.

Dr William Mayo, President of the American College of Surgeons writes —

The lengthening of the span of human life has been put forward as a remedy for social unrest and a means for increasing production Since the close of the Civil War, 15 years have been added to the length of human life, and in the next 20 years it is certain that another 10 will be added When he was a boy it was difficult for a man of 40 to find a new job, and for a man of 50 it was impossible To-day the older men were great assets to the country Their skill and experience counted for much They were less inflammable, and had family ties and responsibilities, so that they were less under the influence of violent agitators

Another great factor in the progress of the world has been the supply of drinking water to cities and nations The introduction of potable water has made prohibition possible Prohibition will enormously increase production The failure of France and Italy to supply potable water necessitates the continuance of wine drinking, just as in Germany beer drinking will continue Alcoholic drinks loosen the control which civilisation has imposed over the primitive impulses of man

But the arch foe of middle life and beyond, was cancer, and measures both for prevention and cure had not advanced in proportion to the need One woman in nine, and one man in 13, died of cancer Good dentistry had eliminated the percentage of cancers of the jaw caused by irritation from defective teeth, but cancer of the lip and tongue was on the increase as the habit of smoking increased among both sexes

RESEARCH AND INVENTION.

Invention of the Tanks.

THE Royal Commission on Awards to Inventors has reported, says a London telegram, of November 27, regarding the various claims in respect of the "Tanks." The Report records that it was primarily due to the receptivity, courage, and driving force of Mr Winston Churchill, that the general idea was put into practice. The Report attributes the principal credit for the designing and the production of the "Tank" to Sir William Tritton and Major Wilson to whom fifteen thousand sterling is jointly awarded. Major-General Swinton is awarded £1,000. The report recognises that of still greater value was his work of advocacy of the "Tank" for which a pecuniary award is inappropriate. Another claimant is awarded £1,000, and two others £500 each. Some claimants are disqualified, because investigation was within the scope of their duties. Mr Tonnyson D'Eyncourt is awarded £1,000. The Commission exceedingly regrets that it is unable to recommend an award for a West Australian named De Mole, who is entitled to the greatest credit for reducing to practical shape in 1912 a brilliant invention which anticipated and surpassed, in some respects, that actually utilised in 1916, but which was put aside because the occasion for its use had not then arisen. The Commission, however, is bound to adhere to the general rule requiring casual connection between making the invention and the Government's use of any similar invention.

Binder Twine made from Flap Straw.

Results obtained from experiments which are being conducted at Ottawa by the Dominion Government indicate that flax straw grown in the Province of Saskatchewan for linseed purposes only can be utilized for the manufacture of binder twine and coarse cordages.

Nearly two years ago, as a result of experiments carried on under the auspices of the Saskatchewan Provincial Government, it was shown that there was a possibility of the fibre of flax cultivated for seed being so utilized. The difficulty in the way of putting the industry on a commercial basis was the absence of a machine which would thresh the straw

without destroying the fibre. Thanks to the efforts of the flax specialist at the Dominion Experimental Farm at Ottawa, a machine has at last been produced which solves this problem, binder twine having been manufactured possessing the necessary tensile strength.

If in the actual process of manufacturing the results are as satisfactory as the experiments at Ottawa indicate they may be, it follows that a two-fold benefit will accrue to the farmers of the prairie province in general as well as those of Saskatchewan in particular. In the first place, it will provide a marketable outlet for the flax straw, while in the second place they will be able to obtain their supply of binder twine at home instead of importing it.

* * *

New Iron making Process.

A correspondent writes in the *Times* —

A noteworthy development in the iron and steel trades concerns the production of pure iron, or iron so near absolute purity—99.84 per cent—as to be regarded as pure. It is equal, if not superior, to Swedish charcoal iron upon which we have been so dependent, while it can be produced with the facility of common steel upon an equally extensive scale and at a competitive figure. The possibilities of the product and process were illustrated during the war. High speed tool steel, for which Swedish raw materials were employed, was in heavy demand, immense quantities being turned out in Sheffield to satisfy the requirements of the establishments devoted to the manufacture of munitions. As is well-known, a hitch occurred between the British and Swedish authorities concerning the materials to be shipped from the latter country to these islands in exchange for our coal. Our proposals failing to be acceptable to the Swedish interests the exportation of charcoal iron and ore was stopped.

WAR TIME PRODUCTION.

It was feared that this interruption would exercise an adverse effect upon the production of munitions by creating a dearth of high speed tool steel. But experiments proved that the pure iron made from the Cumberland and other native ores was a superior base to

the imported product for the preparation of the article in question. Forthwith the production of the pure iron was pushed forward, the result being that this base was turned out in a steady regular stream of 200 tons per month, which proved adequate to keep the Sheffield works fully engaged in working up the requisite product. Consequently no shortage in a vital material was experienced as doubtless the Swedish interests imagined would be the case.

It was also found suitable to the production of telegraph and telephone wires, for which copper had hitherto been employed. Its high electrical conductivity and durability rendered it useful in this connexion, and thousands of miles of wire for these purposes were turned out. As a matter of fact the original search for this pure iron was the direct result of the encouragement extended by the United States Board of Agriculture, which offered a prize for a wire fencing superior to that then obtainable, to placate the agricultural interests, who complained against the short life of the wire available for enclosing their ranches. This fencing corroded so rapidly as to compel frequently recurring expenditure upon renewals. With the pure iron wire fencing replacement is essential only at long intervals, this metal having completely solved the problem.

ENDLESS VARIETY OF USES

To day, the pure iron is being utilized for an endless variety of purposes. When rolled into sheets it assumes an excellent surface for galvanizing, painting, or enamelling. In galvanizing it takes the spelter more readily and evenly, the percentage of wasters being insignificant. It has been demonstrated that it is well adapted to enamelling both in the flat and when fashioned into varying designs as, for instance, culinary utensils. One of the largest firms in this country already quotes a lower figure for enamelling pure iron than any other metal owing to the readiness with which it takes the enamel as well as the saving in labour, time, and material, and superior finish obtained.

* * *

Harnessing the Rhone

France has resolved to exploit the large possibilities of the Rhone, her greatest river, and the *Times Trade Supplement* publishes a description of the scheme. Conflicting interests have

been reconciled and the benefits so distributed that the estimated cost of £100,000,000 can be provided by the beneficiaries, including the State. The projected works, which extend from Geneva to a point a few miles north of Tarascon, will take many years to complete. The three main objects of the scheme are the improvement of transport, the production of electric power, and irrigation. When the locks and deviations have been made, barges of 1,200 tons will be able to pass from the Mediterranean to Geneva by Lyons. The Rhone valley will resume its ancient claim to be one of the great highways of Europe. It appears that no extensive works are contemplated below Tarascon, and the river is already navigable for heavy barges from that point to the desolate but well equipped Port Louis du Rhone. The total fall from Geneva to the sea is over a thousand feet and it is calculated that the utilization of this water power will produce as much electricity as would come from 5,000,000 tons of coal. There are to be nineteen generating stations of from 200,000 horse power for lighting, heating, and factories, each station supplying an area proportionate to its power. Lyons and Marseilles and the P. L. M. Railway will be the largest consumers. Irrigation on a very large scale will become possible. Vast regions with productive soil and kindly climate require only water to turn them from arid sterility to plenty. The benefits obtained in the valley of the Durance will be repeated in the great plains of the Camargue and the Crau.

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Armstrong Locomotives.

Mr W. G. Armstrong Whitworth and Co., Ltd., have developed a new line in their business by converting their Scotswood Munition Works into a locomotive works.

At the date of the armistice the Scotswood works were entirely devoted to the production of munitions of war. Enormous quantities of shells of every calibre from the smallest to the naval projectile of over a ton weight were produced, the output during the period of hostilities reaching to the unprecedented total of 14,500,000 shells, in addition to vast numbers of cartridge cases, fuzes, etc. Under the firm's reconstruction scheme the Scotswood works were selected for the manufacture of locomotives, and one of the most remarkable transformations ever effected was at once put in hand.

TRADE.

THE COMMERCIAL MUSEUM OF CALCUTTA ITS CONSTITUTION AND WORK

THE Commercial Museum has been organized as a part of the Commercial Intelligence Department with the object of bringing Indian manufacturers into touch with firms and individuals interested in their products. The display of a fairly large collection of samples in one centre has assisted to promote the objects as regards actual visitors to the Commercial Museum, whereas the supply of the catalogue, postage free, in response to applications which are constantly received, serves to bring the manufacturers into touch with traders throughout India. The latter, in most instances, are probably not even aware of the existence of the smaller manufacturers, who either can ill-afford or are not enterprising enough to push their trade by advertisements in any of the leading newspapers. A new edition of the catalogue is issued every year before the stocks of the last edition are exhausted, a supplementary catalogue being issued in the *interim*. A departmental circular letter is issued to all exhibitors asking them to intimate their revised prices if any. Particulars regarding the Commercial Museum are advertised in the *Indian Trade Journal*, the weekly organ of the Commercial Intelligence Department. Order books are also maintained in which orders may be registered by visitors direct with the manufacturers or their respective agents. A fairly large number of orders have been placed with the exhibitors through this medium, the Commercial Museum being merely a free clearing house as it were. Any complaints received from indentors regarding non-execution of orders or the supply of articles obviously inferior or different to the samples exhibited are promptly taken up with the exhibitors concerned.

The policy that is adopted in the Commercial Museum is to exhibit free of any charge such articles of Indian manufacturers as are acceptable, and to embody them in a catalogue which is issued gratis to *bona fide* inquirers. Manufacturers are expected to forward their samples free of charge in view of the fact that the Commercial Museum is in effect in the

nature of a permanent advertisement and manufacturers are thereby afforded the means of extending the scope of their business. Samples of all qualities of the classes of articles exhibited are accepted without preference being shown to any individual manufacturer, the only condition being that exhibitors must be able to manufacture on a commercial scale the articles exhibited. The exhibits remain the property of the exhibitors and are returned at any time, if so desired by them, or if it is subsequently ascertained that articles similar to the samples can no longer be supplied. Owing to the accommodation being limited at present, the scope of the Commercial Museum is practically limited to manufactured or semi-manufactured goods produced on a wholesale scale. Exhibits are collected at the Commercial Museum at Calcutta by means of a departmental circular letter which is issued to all known manufacturers of the classes of articles selected for exhibition. Samples are also obtained by the Curator coming personally into touch with manufacturers or exhibitors at the more important exhibitions which are held periodically in India. Exhibits are, moreover, furnished by unknown manufacturers, who offer their samples for exhibition as the result of the establishment of the Commercial Museum being more widely known.

Pending the selection of a permanent building, the museum is temporarily located in the Commerce and Industry building. The accommodation in the museum for samples of Indian manufactures consists of a large hall and verandah, the total dimensions of which are 4,096 square feet. In addition an adjoining room measuring 597 square feet is utilized for exhibiting samples of some of the principal qualities of goods imported into the Calcutta market, with which Indian manufacturers have to compete, and also samples of some articles imported by consuming departments of Government. The former are exhibited for the benefit of manufacturers who are interested in them, and it is hoped that by giving publicity to the latter it will be possible to find local sources of supply already in existence or to encourage their local manufacture. In addition samples are exhibited of

articles largely imported into South Africa and the Persian Gulf, which have been received from His Majesty's Trade Commissioner at Cape Town and the Political Agent at Bahrein, respectively. These samples are exhibited with the object of bringing to the notice of Indian capitalists the demand that exists for an export trade in them in the hope that they will be induced to undertake their manufacture.

The Commercial Museum has undoubtedly served the purpose of bringing forcibly before traders and other visitors a large number of articles manufactured in India, which have been a revelation to many. The smaller manufacturers in particular whose wares are exhibited have derived considerable benefit inasmuch as they have received orders and inquiries which they would not otherwise have received. As articles are not sold in the Commercial Museum, order forms were introduced for the convenience of visitors who may not care to take the trouble to write and place small orders with the manufacturers direct.

The practical experience gained during the past three years from the many enquiries received and the complaints made by visitors in regard to non-execution of orders placed is that the demand for many articles of Indian manufacture exhibited in the Commercial Museum is far greater than the limited supply. The large industrial concerns, such as the cotton, woollen and paper mills, have been unable to accept orders owing to their having been either engaged with Government contracts in connexion with the war or well booked ahead with orders. The smaller industries consisting of bangles, brushes, buttons, combs, cutlery, glassware, matches, pencils, pottery, etc., have not for one reason or another been able to expand their output to meet the large demand. Moreover, the supplies of 'fancy articles' exhibited by small manufacturers, which may be classed as 'cottage industries', are too small and irregular to encourage the placing of large orders. Another factor that militates to some extent against encouragement of orders with small manufacturers in particular is that articles ordered are supplied on the value payable system and the experience of some indentors is that articles received are often not similar in quality and design to the samples exhibited.

Several visitors to the Commercial Museum have expressed a desire to do an export business in certain descriptions of Indian manufactures, but as the output of the majority of exhibitors is unfortunately insufficient to cope with the demand in India it is unlikely that they will be in a position, for some time at any rate, to accept orders for export. There is also evidence on record in the Commercial Intelligence Department that there is a large and growing demand from firms in the United Kingdom, Canada, Australia and United States of America for Indian hand made lace and embroidery if they could be supplied in wholesale quantities.

From the foregoing it is apparent that the Commercial Museum has by no means suffered from lack of patronage or from paucity of orders placed with exhibitors. On the contrary, a fair amount of business has been refused owing to manufacturers not having been in a position to develop their industries to meet the increased demand. The Commercial Museum has also been useful to many traders as an Inquiry Bureau as inquiries are frequently made by visitors in quest of information regarding raw products or other commodities which are not exhibited. In such cases the information available on the subject from the records in the Commercial Intelligence Department is promptly obtained and furnished to the inquirer. The Commercial Museum has, moreover, been a very useful adjunct to the Commercial Intelligence Department in ascertaining information in regard to inquiries received on various subjects relating to Indian manufactures, and also incidentally in acquiring information from visitors regarding the commercial possibilities that exist for various articles both in India and for export overseas. It has in addition helped to make the Commercial Intelligence Department more widely known than it was before the Commercial Museum was organized.

Possibilities for Trade with Persia.

In the course of an interview with His Excellency Shaukat-ul-Mulk the Governor of Seistan, the representative of the "Daily Gazette" learned that the Quetta-Nushki railway has now been carried forward to Buedab on the Persian frontiers, about thirty miles south of the south-western point of the

Afghan frontier, and about 120 miles south, and slightly west of Nasratabad (or Seistan) the capital town of the Governor's province. He is very optimistic as to the future of Persia, and the effect of the Anglo-Persian agreement, if Persians utilise their opportunities. He is also convinced of the great possibilities for the extension of trade between India and East Persia, as soon as the Nushki Railway which is at present used for purely military purposes is made available for mercantile traffic. From the present terminus of the line, there is a good motor road through Nch and Bijand to Mched in the extreme north and another road to Kerma which is about 210 miles west-north-west of Buzdah. Asked about the possibilities of the railway developments in East Persia, His Excellency pointed out the advantages of the line from Buzdah north-ward near the frontier which would tap the fertile districts around the Herat, the granary of Central Asia.

The Trade of Japan.

Japan's foreign trade for the nine months, from January to the end of September was 1,377,820,000 yen in value for exports while the value of imports was 1,384,048,000 yen, representing an adverse balance of 206,228,000 yen. For the same period last year export amounted in value to 1,381,531,000 yen, and imports to 1,225,809,000 yen, leaving a favourable balance of 154,722,000 yen. The general expansion of the nation's foreign trade, however, is seen from the fact that last year the total foreign trade for the nine months amounted in value to 2,610,340,000 yen, while for the same period, this year it totalled 2,961,868,000 yen, though the difference is more on account of abnormal prices than increased volume of trade.

Japan and Britain.

In the House of Commons on November 21, Sir Auckland Geddes stated that he saw no reason at present to fear that British manufacturers would be unable to hold their own in competition with the Japanese. The enormous increase in the importation of goods from Japan during the war was wholly artificial. He deprecated the belief that these goods would hold the British and other markets

when they were again subject to British competition. There was already every indication that the markets which Japan had apparently gained during the war were hungering for British goods.

Commercial League of Nations.

The following scheme adopted at the International Trade Conference at New York will be read with interest —

To promote international commerce, facilitate commercial intercourse of nations, secure harmony of action in all international questions involving commerce and industry, and to promote peace and progress by cordial relations between countries and their citizens by the co-operation of businessmen and their associations devoted to the development of commerce and industry.

It further agreed that no nation may belong to the Business League which is not a member of the League of Nations. This is interpreted as a general endorsement of the League of Nations Covenant by the businessmen of the world.

The scheme for representation on the new body is based on the formation, in each member country where such an institution does not already exist, of a national Chamber of Commerce similar to the United States or British Chamber of Commerce. These bodies will each send two members to central body corresponding to the Council of the League of Nations, which will have permanent headquarters at a place to be selected later.

One of the functions of the International headquarters will be to gather business and industrial data for use by all members of the League.

How Indian Trade is Financed.

A correspondent writes as follows in the *Business Organisation and Management* —

The financing of the Indian trade, as we know it, is undertaken chiefly by the Exchange Banks, all of which have branches in both London and India, and, as far as we are concerned, there are two sides to the business, the financing of exports from this country to India, and the financing of the Indian imports into the United Kingdom.

Let us take the first case, that of the exporter who wishes to send merchandise from, say, England to Bombay. He may obtain payment for his shipment in one of several ways. He may elect to draw a bill on the Indian importer and send it direct to India for collection through one of the banks. In that case he will prepare his bill of exchange, attach to it the necessary shipping documents, comprising bill of lading in triplicate, invoice and insurance policy and hand them to the banker. The banker will send them by mail to his Indian agent, ask him to present the bill for acceptance or payment, and in due course, when the rupees are received, the Indian bank agent will remit the sterling equivalent to London to be paid over to the drawer of the bill, less, of course, the usual charges, say 1 per cent for commission, plus a charge of 2s for postage which it is customary to make on all bills for amounts under £100. Then there will be Indian bills stamps to pay for, and a few other little incidents.

This method of finance is quite all right if the exporter is in no hurry for his money and is content to await the counter-remittance from India, but, if he is anxious to get his money at once, he will sell the bill outright to the banker, or, alternatively, the banker in London will advance a certain proportion of the amount of the bill and will account to him for the balance in due course. In this case, however, the banker pays careful regard to the names on the bill, to wit, that of the exporter, who is the drawer, and that of the importers who will be the drawee of the bill. If these men are of good repute (and it is the banker's business to know whether they are), and if they are of sufficiently good financial standing to warrant his advancing on the bill there will be no difficulty. Generally speaking, however, bankers' purchases of bills are made under an authority given by the Indian importer. It is a form of credit utilised more particularly when a series of transactions are to be financed, and, without going too deeply into the matter, we may briefly describe it in this manner. The Indian importer goes to a branch in Bombay of say, the National Bank of India, asks the banker there to mail or cable home to his London Office an authorisation to purchase the bills of John Jones upon him, Canby Havahoy, the Indian importer, up to a certain fixed

amount, accompanied by shipping documents for a quantity of say, piece goods, to be forwarded to India between certain dates. When he receives this authority the banker in London informs the exporter of his willingness to take the bills if drawn in compliance with the terms laid down in the authority sent home from India. With this authorisation in his hands, the banker is ready to make advances, which, by the way, are on the joint responsibility of the importer and exporter, on presentation to him of bills of exchange and complete shipping documents.

India's Export from U S.

Replying to Sir Frederick Hall in the House of Commons, Sir Auckland Geddes stated that India's exports from the United States for the three months ending the 30th of June had increased by twenty-eight million rupees compared with the corresponding period of 1918, while imports from Britain had decreased by twenty million rupees.

Trade with Germany.

About 18 months ago the Textile Trade section of the London Chamber of Commerce passed a resolution deciding to have no trade relations with Germany for at least 10 years. Another resolution to exactly the opposite effect, expressing the opinion that resumption of business with Germany and other enemy countries should be regarded as properly open to members of the section was proposed by the same mover. Consideration of the motion was deferred for some time.

Foreign Trade Policy.

It is officially announced that, in pursuance of the recommendations of the Majority Report of Lord Cave's Committee, the administration of the Consular Department of the Foreign Office has now been transferred to the Department of Overseas Trade, which already administers the Commercial Diplomatic Service. The staff of the Consular Department will for the time being remain in the Foreign Office, but in all matters relating to the Consular Service will report to the Secretary of State through the Comptroller-General and the Secretary of the Department of Overseas Trade.

FINANCE.

Gold For India.

GOLD to the value of four hundred thousand dollars has been engaged for export to Bombay—says a New York message dated Nov 23

* * *

Conference in London

"Fight the Famine" Council comprising British and European economic experts, to consider the measures of alleviation, held its first public session at Caxton Hall on Nov 6th Sir George Paish declared that Europe was never so menaced as at present Poverty in Germany was so great that there might be an explosion at any moment, which might destroy not only Germany but France, Italy and Britain. The way to restore France was to restore Germany. Another danger was that the world's credit would break down, as the credit of Europe was to day breaking down. The meeting passed a resolution urging the Government immediately to take whatever steps the situation demanded

* * *

Fall in output of Silver.

Mexico, the United States, and Canada are by far the largest producers of silver, and the main factor in the decrease in world's output is the fall of Mexico's exports from 87 million ounces in 1911 to 38 million ounces in 1916. Silver production in the United States was maintained during the war period at an average of 74 million ounces a year, but there was not the steady increase that had been going on year by year prior to 1914

Canada's production, too, has fallen from over 32 million ounces in 1911 to 22 million ounces in 1917, whilst Australia, formerly the fourth largest producer, yielded only a little over four million ounces in 1916, as compared with 17 million ounces in 1911

INCREASED DEMAND

The high price of silver which now prevails (the highest for nearly 50 years) may thus be attributed to a diminution of the available supplies. But there have been other contributory causes, including an increased demand in several directions. The Royal Mint has coined exceptionally large quantities of silver during

the war, and other European countries also have increased their silver coinage. In ordinary times India absorbs silver for coinage, for personal and other ornaments, at the net rate of 60 million ounces a year. During the last two years the Government of India has coined much larger quantities of silver than usual.

* * *

Exchange and Currency.

As much public interest is being taken in the settlement of the problem of exchange and currency and as the Currency Committee will shortly publish their report, we give below the opinions of three gentlemen, who are competent to speak on the subject. We need hardly say that we do not necessarily agree with their views

PROF. GILBERT SMITH

I beg for careful consideration of the proposal which I have been urging in India, that the rupee be stabilized at its present value of 2s by making £1 currency notes legal tender in India at Rs 10 and 10s currency notes at Rs 5. The bearing of this proposal on the American exchange makes it necessary that it should be discussed from the British as well as from the Indian point of view

It may be asked whether if the Indian exchange can thus be stabilized, why not stabilize it at the pre-war rate of 1s 4d (£1 = 15 rupees) instead of at the present, and also the old and long standing rate of 2s (£1 = 10 rupees), by making the £1 currency note legal tender in India at Rs 10? The answer is that to do so would involve a great rise in prices in India, prices already being so high as to cause acute distress among vast numbers of people, and a collapse of the present financial basis of Indian government. India is far less fitted to cope with violent fluctuations in the average price level than Western nations, and the attempt to stabilize the rupee by means which would greatly enhance prices would be disastrous

From the Indian point of view the chief considerations are that with a fluctuating rupee international trade is a gamble, and the acceptance of appointments by Civil servants and others in India is also a gamble. India profited enormously by the stable rupee of the

pre-war period, and badly needs a re-stabilization. This can only be obtained in one of the following ways —

(1) By my method of making British currency notes legal tender in India at the present rate of exchange

(2) By making Indian paper money inconvertible and issuing it freely.

(3) By lowering the silver contents of the rupee

(4) By prohibiting or heavily taxing Indian exports

(5) By freely importing gold into India

Of these alternatives (2) and (3) would be disastrous to India, (4) an injury to India and a disaster to Great Britain, (5) would drain away a practically unlimited quantity of gold into India and depreciate paper money in all the rest of the world. But (1) pools the financial strength of the Empire, and benefits all portions. It means cheaper food and more employment.

MR M. SUBEDAR ON BEHALF OF INDIAN
MERCHANTS' CHAMBER

The Indian mercantile view is that the currency and exchange policy pursued by the Government in recent years has not been sufficiently directed with a single eye to the promotion of India's interest. It is claimed that the measures that may be adopted in the future should be such as to secure the active co-operation of Indian businessmen. The Chamber deprecates, unless it is proved to be inevitable, "the continuance of a system of currency management in which the controlling power lies not with those who live in India and who are directly concerned in the matter, but with those who try to manage things from the standpoint of the London money market, the English Treasury, and English financial and commercial interests."

The suggestion of the Chamber is for the issue of a new coin, of the value of, say, Rs 2 or 3, as a token coin with so small a percentage of silver that even if the metal rises to 70d or beyond there would be no danger of the new issues being melted down.

The Chamber desires the removal of prohibition of private imports of precious metals into India imposed during the war. It lays stress on the necessity of a state Bank for India.

MR S. K. SARKAR, I. A., B. L.,

I have said that the Exchange Committee cannot recommend any permanent solution because I am deeply persuaded that unless the value of the precious metals is fixed once for all by international settlement and the mints are open to the free coinage of gold and silver in India, there must be an inevitable increase in the volume of currency responsive to the demands of the country but to the demands of the export trade, leading to the inflation of prices and all the consequences that flow from it. I do not think outside a handful of economic empiricists, whose number can be counted on one's fingers' ends, there is any support for the present "exchange standard" which I maintain is neither fish, nor flesh nor good red-herring, and there is no strong body of men who recommend it for civilised communities.

* * *

British Finance.

In the course of his speech in the House of Commons, Mr. Chamberlain made the following general remarks regarding the finance —

"For many years past we have recognised in the conduct of Debates upon foreign affairs that what was said in this House was not confined to the ears of this House, but spread over the whole world, and that our discussions had reactions far beyond our own boundaries, and the House has accordingly, with happily few and rare exceptions, carried on its foreign relations discussions in that light of the consideration and with all the seriousness and the discretion that that consideration demands. To-day the same thing is true of Debate on our financial situation. They no longer are listened to or read by ourselves alone. They are watched throughout the world, and what we say here will and must have an effect not only upon confidence at home but upon our international credit in the world at large. The position that is disclosed in these financial papers is a grave one. Let us treat it gravely. There is every reason for caution, for economy and for wise husbandry of our resources. There is no reason for panic. Do not let us start it. There are some people who confuse hysteria with strength. They are not the same thing and I hope the House of Commons will not make that mistake."

MOTOR TOPICS.

A Motor Show

A Correspondent writes in the *London Times* The forthcoming show at Olympia will for many reasons be of more than usual interest. The recent Automobile Salon in Paris, of course, served to introduce a number of new cars to the public, but there has been no opportunity since 1913 of studying a representative and up-to-date collection of British vehicles for a comparison of the progress that has been made by various manufacturers and the success which is likely to attend the efforts of new entrants into the industry.

Mass Production.

One development that will be noticeable at Olympia is the decrease in the average number of models produced by each manufacturer. The tendency is in the direction of specialization upon one model. In most cases the output capacity of factories has been much enlarged, and consequently for both reasons a long step has been taken in the direction of comparatively large quantity production. For the rest, the main change is in the direction of simplification of design, the use of new but well proved materials, and the consequent reduction of weight.

In fact, many manufacturers, realizing that they cannot possibly offer good cars at a low price, have preferred to devote their attention to a product which while fairly expensive as regards first cost, shall give the best possible economy as regards cost of operation, effecting savings in such items as fuel, tires, and general maintenance. Most post-war models also recognize to some extent the probability that a larger percentage of motorists will now dispense with the services of paid drivers, and the consequent desirability of simplifying the necessary work that must be done by the car-owner himself to keep the vehicle in good condition.

Future of Motor Traffic.

Sir Eric Geddes, Minister of Transport, speaking at a dinner of the Society of Motor Manufacturers and Traders, in London on November 8th said: A new era of transportation was beginning, and we must have better roads, reserved exclusively for motor traffic, with a private organisation acting as a clearing

house. The roads must be classified and standardised and through routes laid down and maintained up to the standard by means of a levy on the users of the roads and landlords who benefited by the fast traffic over their estates. There was a great future for the road transport of goods and passengers within a radius of fifty miles of the great towns, providing better service than the railways. We must also find a cheaper road train than the present lorry and cheaper fuel.

Motor Ships for India.

Discussing the prospects of the motor boat industry in India, the *Motor Ship and Motor Boat* says that there is likely to be a great development in the construction of moderate-sized motor vessels for use in India, particularly large shallow-draught craft for passenger and freight carrying on the rivers. Several boat-building yards suitable for construction of motor craft up to 100ft in length have been established during the past two or three years and a very large site has just been acquired by a company close to Calcutta, where shipbuilding will be carried out on a larger scale than hitherto.

The chief demand will be for hot bulb engines, as well as paraffin motors for the smaller craft. British manufacturers would do well to make themselves more fully acquainted with the possibilities of this market.

During the war, owing to the difficulty of obtaining marine fuel for Great Britain, very large numbers of American engines were imported, but as manufacturers in the United States do not cater for the market for hot-bulb and pure paraffin engines to quite the same extent as British firms, the latter should be able to make good headway, provided their prices are not too far above those of their foreign competitors. —*Times of India*

The Automobile Association.

The Hon Mr Purshotamdas Thakurdas, C I E, M B E, J P, and Mr H P Gibbs, have joined the Provisional Committee of the Western India Automobile Association. The other members of the Committee are Messrs F Robinson-Ward, R. H Higham and

E J M Hudson, with Mr H A H Payne as Legal Adviser. Mr G M Rose, of 12-14, Church Gate Street, Bombay, is the Honorary Secretary from whom forms of application for membership may be obtained. Forms may also be obtained from any motor dealer in Bombay and at the principal clubs throughout the Presidency.

Roads and their Past.

A correspondent writes in the *Times of India* —

It is written in old Persian and Indian histories that some of the emperors took the most diligent care in the matter of constructing roads. Darius Hystaspes, for example, is said to have been the first man to bring the postal system into existence by causing messengers to carry letters at certain stages which were marked out on roads which were so well built that each "khepia" messenger ran a long distance in a short time. To Akbar has also been given the honour of constructing some of the best built roads of India.

The Agra-Bombay road, along which many a motor race has been run, owes its origin to the genius of some one or more Indian princes. However, even though the ancient orientals knew the art, yet the modern methods of road construction are of occidental origin, and it was the Romans who spread the light of civilization all the continent of Europe by constructing magnificent roads. Tracing ancient history, we find that Rome has something definite to show in connection with road-construction. Even to-day there are roads in the north of Britain that still point their origin to Roman hands, just as the great novelist Scott says, in the beginning of his romantic novel *Ivanhoe*, that there are forests and trees in Yorkshire to-day too under whose shade the marching legions of Rome sat or rested awhile. The Alpin Way, built by the Romans long before the birth of Christ, seems to be the first landmark in the history of modern roads.

New Companies.

During the week a couple of big motor companies have been incorporated in Calcutta. The more ambitious concern is the Calcutta Motor Service, Ltd, with a capital of Rs 50 lakhs, the Managing Agents being Messrs

M McGinley and Co. The object of the company is to provide Calcutta, Howrah and the suburbs with a rapid, efficient and up-to-date motor-bus passenger service as an auxiliary mode of quick transport. Concurrently with the passenger service the company will maintain a fleet of highly upholstered cars to meet the convenience of tourists, visitors and residents, while a well-equipped taxi-cab service is also contemplated. A special feature of the motor-bus passenger service will be a number of omnibuses *de luxe* to ply between the European residential quarters of Calcutta and shopping centres. Arrangements are being made with a leading American firm specialising in the manufacture of the various types of cars and lorries required to ship immediately 200 chassis, cars and taxis to Calcutta, and to send out an expert to organise the service on a sound basis. It is anticipated that the company's cars will be plying for service all over Calcutta and Howrah by the beginning of January next.

The Bengal Motor and Electric Co., Ltd, incorporated with a capital of Rs 10 lakhs, is a purely Indian concern, the managing agency being in the hands of Messrs Ganeshdass Ramgopal. The capital has already been oversubscribed. The company intends to secure agencies for automobiles and accessories, machineries and electrical goods from British and American manufacturers, who still remain unrepresented in India.

Motor-Cycling.

"The British trade does not seem to understand what real service means." This was the opinion expressed by a United States motor-cycle trade commissioner early this year, and a good many British riders are in agreement with him. There is no denying that in the past there has been a great lack of sympathy generally between the maker, the agent, and the rider, but there are many hopeful signs that this is coming to an end and that the British motor-cycle trade has learnt its lesson.

During the past six months riders have complained of endless delay and irritating correspondence over replacements by makers. Little allowance has been made for the great disorganisation in the change-over from war to peace, but even this dislocation has not justified many of the cases of neglect alleged against British firms and in many cases of agents.

NEWS AND NOTES.

A message from London of November 26th, says that the sales of cotton mills in Lancashire continue. A syndicate has arranged to purchase six concerns at Ashton-under-Lyne, totalling over half a million spindles for a million and a half sterling.

During one week-end new capital issues in Britain, totalled over 14 millions sterling. These are the kind of companies which are being floated —

Department stores	Films
Soap and candles	Oil
Agriculture	Bricks.
Produce broking	Sea fishing
Agricultural machinery.	Insurance
Mining	Shipbuilding
	Marine salvage

Acting upon the recommendation of the recent International Trade Conference, a national committee has been organised to supply long-term credits for European purchases in the United States. The personnel includes Mr Taft and Mr Schwab

In the wake of a merchants' association for the district of Tanjore which was formed in April last, has followed a merchants' bank for financing the operations of their trade.

The main objects of the Merchants' Association were the promotion of unanimity amongst them, the collection and the compilation and distribution of information upon subjects of commercial and industrial concerns and the rendering of help to them for the starting of banks

A meeting of the rice, grain and sugar merchants of Madras was held at the office of the Southern India Chamber of Commerce with Mr Abdus Subhan Sahob in the chair. Speeches were delivered on the need for a separate association. On the motion of Mr Abdul Kareem Noor Mahomed, an association to be called "The Rice Grain and Sugar Merchants' Association" was formed

The Board of Trade has appointed a Committee to inquire into and to report upon the following questions —

1 Whether any extension or amendment of the Merchandise Marks Act is required in respect of the provisions relating to indications of origin

2 The utility and effect of National Trade Marks or other similar (collective) marks, and how far they should be authorized or encouraged in this country

3 How far further international action may be necessary for the purpose of preventing the false marking of goods

The following have been appointed as members of the Committee — Mr Harry Green, M P (Chairman), Mr N E Behrens, Mr M B Dickie, Colonel Sir Nugent T Everard (Bt), Mr H Fountain, C B, C M G, Mr W Temple Franks, C B, Mr George Hayhurst, Mr J Hood, M P, Mr C Hyde, Mr J Evans Jackson, Mr D M Kealy, K C, Mr Lennox B Lee, Mr G A Moore, Mr Thomas Pratt, and Mr R T Wilson. Mr M F Levy has been appointed Secretary

H E Lord Willingdon performed the second formal opening of the Madras Women's Work Exhibition on November 27th, in the presence of Lady Willingdon and a large gathering. Mrs Todhunter in a short speech requested His Excellency to distribute the awards. The Governor then gave away the medals and certificates for the best exhibits. The Governor's silver medal was awarded to the Subadar in charge, and bronze medals to others in charge of the Queen Mary's Disabled Soldiers' sections. Silver medals were presented to exhibits from the French Settlements, Ceylon, Travancore, Hyderabad, Cochin and Pondicherry

In the House of commons, Sir A Geddes announced that as from December, 1st, household coal would be reduced by 10 shillings per ton with a view to making special effort to reduce the cost of living. Moreover the price of bunker coal for ships engaged in coastal trade would be reduced to the industrial level, while Government was examining the question of vessels engaged in foreign trade because

bunker prices were so high that there was a danger of average level of rates rising unless corrective were applied

The mill-hands of Elgin Mills, Cawnpore, followed the example of the Wollen Mill weavers by striking. No notice were received by Mun and Victoria Mills and the employees in these mills nevertheless came out in sympathy. In the case of the Victoria Mills, where there had been trouble before, increases of wages were granted last month to bring them up to the level of the other mills. In the case of Mun Mills for the last 12 months in view of the high price of food stuffs, a grain shop has been run for the benefit of the operatives, where grain has been sold to men at less than cost price. Schemes are also on hand for the building of workmen's dwellings such as the Wollen Mills already have in the Lalimbi settlement and only await the formation of the Improvement Trust. Saving and provident funds are also in contemplation for the workmen in the concerns, which have not already got them.

A meeting of the principal employers decided that the hasty and unwarranted action of the workmen compelled the employers to take concerted action and to stipulate that the men must return to work in the first instance before any consideration could be paid to their demands or grievances.

A scheme for all-India services, as a basis of scientific organisation, has been put forward by the Indian Industrial Commission in paragraphs 120-126 of their report and supported by the Government of India subject to certain criticisms of detail in their despatch dated 4th June, 1919. The Government of India have decided to deal in the first place with the case of officers employed under Government as chemists and have, with the concurrence of the Secretary of State, appointed a committee with the following terms of reference—(1) To consider whether an All India Chemical Service is the best and most suitable method of overcoming the difficulties and deficiencies pointed out by the Indian Industrial Commission, (2) in the event of the Committee approving of an All-India Service to devise terms of recruitment, employment, and organisation to indicate the extent to which chemist

already in the Government employ should be included in that service and to suggest what should be the relations of the proposed organisation with the public and with the departments of the Government of India and of local Governments, (3) in particular to frame proposals for the location, scope, and organisation of institutions for chemical research. Professor J. E. Thorpe, C. B. E., D. Sc., Ph. D., F. I. C., F. R. S., Professor of Organic Chemistry in the Imperial College of Science and Technology, London, has been appointed President, and Dr. J. L. Simonsen, F. I. C., F. A. S. B., Forest Chemist, Dehra Dun, has been appointed member and Secretary.

It is stated that during the month of October 649 motor cars were imported into British India of which 609 were from the United States of America. Between the months of April and October the total number of cars imported was 3,202 estimated at a total cost of over 90 lakhs of rupees. Last year there was a prohibition regulation and the imports totalled only 34, valued at about 1½ lakhs. Of the 3,202 cars imported between April and October this year, 3,039 cars came from the United States, 158 from the United Kingdom, four from Italy and one from France. Taking the provinces separately, Bombay imported 1,572, Calcutta 938, Madras 329, Burma 229, and Karachi 131.

The Paris *L'Espresso* publishes the following true story of the working of the French luxury—

A man went to one of the big furniture dealers to buy a writing table. Choosing one of the least pretentious pieces, he asked the price. It was 800 francs, which seemed rather high. The shopman, however, added "We will add this little arm-chair. It isn't dear. Only 50 francs."

"No I don't want it. I have quite enough chairs."

"Excuse me," said the seller. "If you buy the desk alone I shall have to ask you to pay the luxury tax, which comes to 80 francs. But if you take the chair as well I shall be able to put down your purchases as a suit-office furniture. For this the tax limit is 1,500 francs, and I do not have to charge you on a purchase of 850 francs. Thus if you take the chair you save 30 francs and have an extra piece into the bargain."

As a measure of economy the chair was bought

France is not the only country in which legalised absurdities of this kind are to be found. At home, it is said, the problem of "How to Dodge Doin" has become almost a popular pastime.

* * *

A Delhi communique announces that compensation can be claimed from the late enemy Governments in accordance with the Reparation clauses of the Treaty of Peace in respect of damage falling under the following categories --

(1) Damage to injured persons and to surviving dependents by personal injury to or death of civilians caused by acts of war, including bombardments or other attacks on land, on sea, or from the air, and all the direct consequences thereof, and of all operations of war by the two groups of belligerents wherever arising

(2) Damage caused by Germany or her allies to civilian victims of acts of cruelty, violence or maltreatment (including injuries to life or health as a consequence of imprisonment, deportation, internment or evacuation), of exposure at sea or of being forced to labour, wherever arising, and to the surviving dependents of such victims

(3) Damage caused by Germany or her allies in their own territory or in occupied or invaded territory to civilian victims of all acts injurious to health, to capacity to work, or to honour, as well as to the surviving dependents of such victims

(4) Damage caused to civilians by being forced by Germany or her allies to labour without just remuneration

(5) Damage in respect of all property wherever situated belonging to any of the Allied or Associated States or their nationals, with the exception of naval and military works or materials, which has been carried off, seized, injured or destroyed by the acts of Germany or her allies on land, on sea or from the air, or damage directly in consequence of hostilities or of any operations of war

(6) Damage in the form of levies, fines and other similar exactions imposed by Germany or her allies upon the civilian population

Persons or firms desiring to register their claims should apply to the Local Government or Administration within whose jurisdiction they reside or carry on business. Any other information required on the subject may be obtained from the Local Government or Administration concerned. It is desirable that the claims should be substantiated as fully as possible

* * *

Speaking at a luncheon at the Savoy Hotel given in his honour by the Free Trade Union Sir Donald Maclean said Free Traders in the House of Commons meant business, and Liberals who imagined that the small measure of Imperial Preference so far adopted was of no consequence had been giving away the Free Trade citadel

It was all rubbish to talk about small instalments of Imperial Preference not amounting to much. The advance guards were in the ramparts of Free Trade and the sooner they realised that the better. "This is pre-eminently a fight for the country," added Sir Donald, "Go out and let the people know that the reign of corruption is at hand because, unless I am much mistaken, before this Parliament is dissolved, another and greater attempt will be made."

Referring to financial situation and the Chancellor's speech in the Commons, Sir Donald said we had Jeremiah sounding his dreary prophetic note on August 7. Now we had Mark Tapley putting in his appearance on the stage. There was no credit in being jolly on such an occasion as this. That the financial position should be treated with such flippancy such lack of a grasp of the realities of the situation made him tremble not only for the future of Free Trade, but as to the financial stability of the nation in the troublous times ahead

OURSELVES

We regret that, owing to unavoidable circumstances, the issue of this journal has been delayed. We are making the necessary arrangements for publishing future issues in time

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COMMERCE & INDUSTRIES

The Industrial Commission has been sitting investigating the opening for the profitable employment of Indian capital in Commerce and Industry. But we do not want merely Indian capital. We want Indian men, and not Indian men only as labourers, but as leaders who will turn their attention to industrial enterprise and equip themselves for a great industrial regeneration in India. We want to see men devote themselves to scientific research. We want to divert some of the great stream of students which now pours into the channels leading only to the clerical and legal professions, into the channels which will lead to industrial and commercial enterprise. We have now before us the Report of the Industrial Commission which tells us this may be done. I can assure you that in the case of this Report too I have no intention of letting its volumes moulder upon our shelves. Action has already been taken upon, and before a year elapses, I hope to see the foundations laid of a scheme for progressive industrial development in India. But let me once more emphasise the point that it is men that we want to do this thing. - H. E. LORD CHILSFORD, Dec 16th, 1918

PUBLISHED BY

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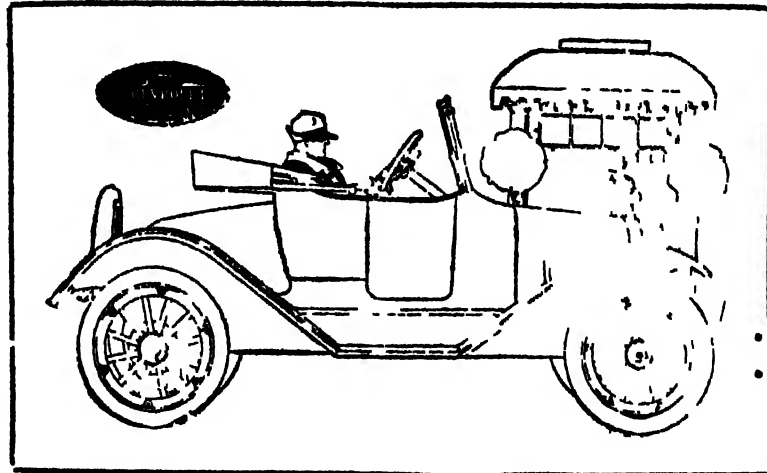
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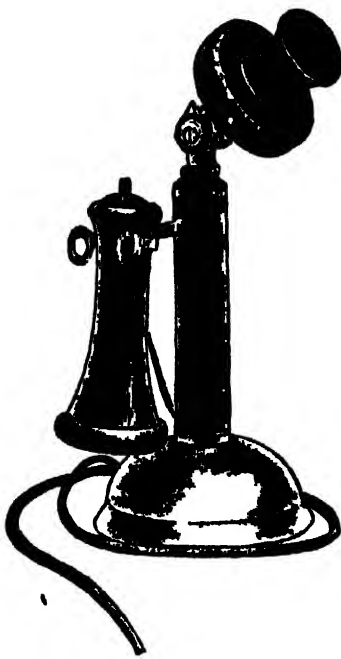
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Vol. I.

December, 1919.

No. 6.

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"COMMERCE & INDUSTRIES"

Vol I

DECEMBER 1919

No. VI.

COMMENTS AND EDITORIALS.

The Royal Proclamation

HIS Majesty's Gracious Proclamation, which we publish elsewhere, announcing the Royal Assent to the Reform Act, has been received with feelings of profound satisfaction and gratitude by all classes of people in this country. We feel that no nobler words can herald the new era on which India is entering, or brighter sentiments restore the waning confidence of the Indian people in the goal of British policy in this country. The Message breathes, in every line of it, a generous and sympathetic spirit and holds out encouraging and cheering promises for the future. We deeply appreciate His Majesty's direction to the Viceroy to exercise Royal Clemency to political offenders. We earnestly trust that the eloquent appeal for co-operation and unity, which is the underlying note in the Royal Message, will evoke a magnificent response from the people.

The Situation in Europe

We referred last month to the fearful portents in the European sky. Events in that Continent march with such quickening rapidity that it is difficult for us, who are far away, to apportion their relative importance with a proper sense of perspective. Our forecasts of to-day are likely to be disproved by the

happenings of to-morrow. The problems arising for solution are such as to baffle the keenest ingenuities of even wide-awake statesmen. We write, therefore, with great reserve.

The very serious question of deciding the future of Russia and Turkey continues to engage the time and attention of the leading statesmen of Europe. The enormous indebtedness of Russia to France renders it impossible for the latter country to be indifferent to its solution. France is passing through a serious economic crisis, the rate of exchange standing at the unprecedented figure of 45 30 francs per £. Further, European nations are interested in checking the advance of the Bolshevik peril. The financial position in England necessitates the withdrawal of her forces from the occupied territories but the attitude of Germany is changing for the worse. The League of Nations, about which so much was spoken and written, appears, for all practical purposes, to be impotent, since America, which practically initiated it, has, more or less, deserted it. All these grave and momentous questions appear to have been discussed in the recent conference between Mr Lloyd George and M Clemenceau who are said to have arrived at a satisfactory understanding.

India's New Charter

We welcomed, in our previous number, the publication of the Report of the Joint Parliamentary Committee on Indian Reforms and expressed the hope that Parliament will pass the Reform Bill without mutilation or delay. We are happy that the Reform Act has been placed on the Statute Book and that India is entering upon a new era. The old order has verily changed, yielding place to the new. It is our duty to undertake the new responsibilities in a spirit of confidence, enthusiasm and trust and we have no doubt that Indian leaders will rise equal to the occasion.

International Labour

We notice, from the proceedings of the Labour Conference at Washington, that much interest was taken in the settlement of the problem of the eight hour day or the 48 hour week. The workers demanded that the above principle must be accepted but the employers contended that the principles must be elastic in the best interests of their industries. A Communique on the subject says that "after a long argument the employer agreed to accept the eight hour day principle on condition that, in the case of industries having either a half holiday or other hours of rest, those hours which were worked could be added on to the working day. The workers in their turn objected to this on the ground that it would give too much latitude in that, hours might be fixed at eight for one day, ten for the next, twelve for the next, and so on." Out of this apparent dead lock, the following agreement viz "that such regular hours of rest might be redistributed on other days but on the condition that in such cases no working day should exceed nine hours in length" was reached. The workers' request that the eight-hour day and the 48 hour week, principle be applied to transportation by sea and inland waterways was approved as also the

employers' request that the devastated regions be excluded from its application.

Indian Labour

In our own country, labour is slowly organising itself. We are not opposed to the Labour Movement *qua* Labour Movement as we are conscious of the advantages of organisation in every field of human activity. We fully concede that such a movement has great potentialities in it. It might be a sound corrective of recalcitrant employers. But it must be carefully organised and properly led, especially, at its initial stage, so that the movement may keep within its bounds instead of growing into a menace to Society. We have no reason to believe that this aspect of the movement has escaped sufficient attention of those who are promoting it.

The Imperial Bank

Sir Norcott Warren's proposal for the formation of an Imperial Bank of India by the amalgamation of the Presidency Banks has aroused considerable interest in this country. There are many who view with misgiving the proposed move. Mr. S. R. Bomanji of Bombay has invited the shareholders of the three Presidency Banks to a Conference to be held next month for the consideration of this important question. While reserving our own comments, we give below some of the reasons advanced in favour of this scheme. It is explained that public opinion in India is becoming more and more articulate and that an Imperial Bank with access to London and with other special privileges from Government would be in a better position to provide for healthy banking developments and would bring the resources of Government into a closer and a more beneficial relationship with this country's Commercial interests. It is further pleaded that a London Office would be in close touch

with the London money market, would arrange sterling loans for local bodies in India and make investments in British securities, would re-discount Bills of Exchange relative to Indian trade drawn in Rupees or in Sterling and would seek to be entrusted with the Secretary of State's remittance business and the handling of his sterling balances.

Agricultural Conference at Pusa

The Agricultural Conference at Pusa, which was attended by a large number of experts, discussed numerous important subjects. The resolution that local panchayats must be given greater powers to effect improvements in irrigation and road-making with rights of levying taxes, if given effect to, will substantially facilitate the development of Agriculture. By far the most important question discussed by the Conference related to the prevention of famine and the steps to be taken *in advance* to meet famine conditions. The following remedial measures which the Conference recommended unanimously will be read with interest and profit: (1) Development of well boring, (2) Relieving land owners of the cost of unsuccessful trial borings, (3) Systematic survey of supplies of under ground water, (4) The use, in certain areas, of strainer tube wells, (5) Survey and mapping of rivers which can be utilised by pumping in seasons of drought, preliminary choice of pumping stations and command of the necessary pumps, (6) Anti erosion protective works and afforestation, (7) Investigation into the application to India of dry farming methods, and botanical investigation of drought resisting crops and strains of crops, (8) Improvement of grass areas (as by introduction of better grasses and control of grazing) both in precarious tracts and in districts which send fodder to the precarious tracts, (9) Systematic investigation of emergency fodders, (10) Further investigation (in continuation of enquiries already

made) of methods of grain storage to prevent loss by rats, mice, insects, and decay, and (11) Reconsideration of the problem of large-scale storage of grain.

Sir Claude Hill's Speech

Sir Claude Hill's valedictory address contains several points of interest. Referring to the problem of cotton and the development of its cultivation in India, Sir Claude announced that action will be taken in conformity with the recommendations of the report of Mr McKenna's Committee. Regarding the question of Agricultural development, he hoped that not only that State education for agriculturists has taken a start but that most of the major Provinces in India will be furnished with a well equipped college for higher education and for research in agriculture. The policy for the future, said Sir Claude, will be to Indianise the Imperial Agricultural service as rapidly as this can be done, although he recognised that for some years to come, the best men procurable, wherever recruited, will be required. Sir Claude Hill concluded his speech with a fine peroration appealing to all people that racial antagonism must soon disappear.

The Madras Stock Exchange

We have received a copy of the Prospectus of the Madras Stock Exchange which has recently been formed in this City. The advantages of a Stock Exchange in developing trade and industry are great. It will attract dormant wealth to the field of business, keep alive the interest and enthusiasm of merchants and generally, rouse the lumbering capitalists to activity. This organisation has not come a day too soon in Madras and we congratulate the gentlemen who were responsible for initiating it.

The Prospectus clearly sets forth the general advantages of Stock Exchange and

indicates how it can directly contribute to Commercial and Industrial development in Madras. The Membership will be limited and only gentlemen of position and standing will be admitted at the discretion of the Board of Directors. The admission fee is Rs 1,000. The following gentlemen constitute the Board —

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The Directors will, as soon as the necessary number of applications has been received, frame rules and regulations for the conduct of business on the Exchange. We hope that the businessmen of Madras will co-operate in establishing it on a sound and enduring basis.

The Viceroy in Madras

H. F. Lord Chelmsford visited Madras on the 24th November and stayed in the City for three days, during which time, he visited various institutions and carried out a heavy programme of engagements arranged for His Excellency by Lord Willingdon. As many as fourteen public bodies presented Addresses of Welcome to Lord Chelmsford and in a joint reply, His Excellency has spoken of matters in which we are directly interested. After expressing appreciation of the work of Sir Francis Spring for his labours in connection with the Madras Harbour, the Viceroy said that the question of improving the Vizagapatam harbour will make material progress in the

near future. With regard to Railways, a Committee, which will sit during the cold weather of 1920-21, will inquire into the contentious subject of State and Company management of Railways. The idea of removing the disadvantages arising from differences of gauge must remain a dream for the present in view of the heavy cost which it involves. Referring to the question of industrial development H. F. the Viceroy spoke as follows:

"The Southern India Chamber of Commerce have referred to the economic dislocation brought about by the war, and to the problem of prices. They look forward to the development of Indian industries as the need of the moment, and I trust with them that in the launching out of a vigorous industrial policy will be found the solution of many of our difficulties. Madras holds an honourable position in respect of industries and has the right to ask for a vigorous policy, but I can assure you that my Government is pressing forward in the matter. The recommendations made by the Indian Industrial Commission have been dealt with as expeditiously as possible. Sir Thomas Holland who will be in control of the new development is shortly returning, and I hope that the foundations of a new industrial era will in the near future be laid deeply and surely."

On the question of exchange and currency and financial settlements regarding the Provincial and Central Governments, His Excellency said —

"In my speech at the opening of the recent session of the Imperial Legislative Council I referred to the present difficulties regarding exchange and currency, and I do not think I need say more than to repeat that my Government are fully cognisant of the handicap to trade and commerce caused by these difficulties. We are looking to the Currency Committee for their solution, and I am sure you

will understand that the extremely difficult problem with which they are dealing is one that requires much careful deliberation, but I understand that they are now reaching the final stages of their enquiry.

"I am aware that for many years your Presidency has cherished a grievance in respect of the alleged disproportionate amount which it contributes from its revenues to the common purse. Lord Willingdon has not failed to press me in this matter and would, I suspect, in his transferred affections be willing that even Bombay should suffer for your advantage. You probably know that the present system of financial settlements with the provinces will automatically come to an end with the introduction of the Reforms scheme and the reclassification of revenues between the Central and the Provincial Governments. That reclassification will result in the provinces being allotted considerably larger revenues than at present. The Government of India, however, will be left with a deficit, which must be made good by contributions from the provinces. The decision as to the amount of contribution to be taken from each province will be an extremely difficult matter and a Committee on Financial Relations is to be appointed to go into the matter very carefully. That Committee will of course give due weight to any representation that any province may put forward regarding the proportionate contribution to be taken from it and your Presidency will have ample opportunity of pleading before the Committee the special case of Madras. I may mention that in order to arrive at some basis for the initial contributions to be taken from the provinces on the inauguration of the Reforms schemes, and also to clear the ground as much as possible before the Committee on Financial Relations takes up its task of fixing the ultimate scale

of contributions, an informal conference was held at Simla in October between officers deputed by the various Provincial Governments and the Finance Member, and I hope that their deliberations will prove to have facilitated the Committee's work."

* * *

Excess Profits Tax

The Chancellor of the Exchequer, Mr. Chamberlain, announced, some time ago, in the House of Commons that while the financial situation in England gave no cause for panic, steps were being taken to reduce the burden left by the war. He said that a select Committee would examine and report upon the practicability or otherwise of the taxation of war profits. This suggestion has caused a flutter in the London business dovecot. At the monthly meeting of the Council of the Association of British Chambers of Commerce, the proposed taxation of war profits came in for a good deal of criticism. It was stated that to reopen all old transactions for the sake of those who had escaped taxation was unsound and impracticable and would cause much damage to industry. Further, to interfere with the finance of business would damage the finance of the country in such a way that it would be years before that damage could be repaired. After much discussion, the Council passed the following resolution—

"The Council of the Association of British Chambers of Commerce records, for the guidance of the Government, its opinion that the recent proposals for taxation of what are in many cases mistakenly called war profits are preventing British trade expansion and are shaking the confidence of those to whom capital and reserved profits are the working tools of their trades. The Council considers that apart from death and other existing duties and taxes any proposed additional reduction of the National debt by direct

taxation should be provided by taxation of current profits and current income. The Council lays it down as an axiom that any attempt by the State to re-open trading transactions of the past in order to take the profits on them can only result in inextricable confusion and injustice, and in grave injury to trade and to the economic fabric of the nation."

We admit that it will be very difficult for the State to fix the exact amount of war profits in each case as a preliminary to taxing it. Apart from the contention that such action will cause in the business world it will, to some extent, check the growth of business by engendering a feeling of nervousness in the minds of the people. There are also certain misunderstandings in this connection. Capital is wealth engaged in service or readily available for the purpose. A business man's capital will be spread through every commercial activity he undertakes and need not be a 'bag of gold'. In fact whatever is capable of being used for the production of more goods represents capital. The narrower conception of capital is ill-gotten gain at the expense of labour. The difficulty of exacting a war profits tax is great by itself and it is clear disservice to attempt to reduce the liquid capital which will have the effect of ruining many commercial undertakings. Further, a general order to tax war profits will result in capital not being able to be converted into currency because there would be very few buyers when most of the people become sellers. The disadvantages of the State receiving payment in kind are too patent to require explanation. We admit these practical difficulties.

But we are not sure of the wisdom of the Council in condemning the proposal in advance. The report of the select Committee has not been published and it would have been far play to have awaited their recom-

mendations. If the select Committee suggest ways and means of carrying out the proposal without provoking much opposition or crippling industrial progress, we do not see why those who made fortunes out of the war must be allowed to escape without being compelled to bear a share of the national burden. We emphatically condemn the actions of those who took advantage of their country's difficulties to exact unreasonable profits for themselves. We admit that there is considerable divergence of opinion even among well-informed people in England as to the best way of reducing the National deficit. The *Times* calls the scheme of the Chancellor of the Exchequer to tax war profits chimerical while itself detesting those who made unreasonable fortunes at the expense of the country. It says that "there is only one way to prosperity and that is by increased production, which we shall never get in sufficient measure until capitalists have confidence in the continuance of satisfactory conditions and the workers see that their future prosperity depends not upon their power to hold up the community to ransom, but on their active Co-operation in the creation of wealth." We admit that there is much force in this argument. While it will restore England in the even tenour of her ways, will this course substantially mitigate the national burden? Mr. Asquith thinks that the only way of dealing with the situation is to frankly impose additional taxation. He says—"We could not get rid of the real incubus upon our future prosperity without taxation, and taxation must take—because we could not go on increasing the burden upon the necessities of life—one of two forms. There were only two choices—either an increased income tax, which is already very high or some form of duty upon realised or realisable wealth."

Income-Tax Audits and the Assessors

We desire to invite the attention of the authorities to some of the inconveniences and hardships which the practical working of the Income tax Act of 1918, subjects both merchants and Auditors. Under the Indian Companies Act qualified persons are authorised to audit and report on the accounts of limited companies. From among these Auditors, a very small number is distilled under the Income tax Act and granted authority so that they might assist the Income tax Collector by their reports, in deciding upon income tax assessments. The procedure generally is for the merchants to get their accounts checked by the Auditors and for the latter to forward their reports to the Income tax Collector, who will keep them as the basis for assessing the amount of Income-tax. We have received complaints from merchants that in actual practice they are put to a great deal of avoidable worry

When once the merchants have submitted their accounts to the rigorous scrutiny of the Auditor and have satisfied him on all points, we believe, their responsibility in the matter is over. But, in some cases, things have happened like this. The Income tax Collector on receipt of the Auditor's report, and after a good deal of subsequent correspondence with him, has directly issued summons to the very merchants to appear before him with their account books and vouchers etc. We need hardly say that the hardship is patent especially to businessmen to whom time is money. The only explanation for this cumbersome procedure which we could gather is that the authorities desire to have a complete list of the constituents of the Assessors and where they fail to get this information, either from the Auditor or from the Assessors they resort to this devious course. Whatever may be their intention in gathering such infor-

mation, we feel that to compel a merchant to disclose his trade secrets is very highly objectionable and unreasonable. The Income-tax Act of 1918 is only a year old and it was passed with the object of encouraging merchants to submit their accounts for audit, to promote generally business efficiency, and to avoid income tax litigation. Merchants are slowly taking to it and when they are able to appreciate its advantages the objects of the Act will be fulfilled. But instances such as we have pointed above can have the effect of only dissuading them from submitting their accounts for scrutiny and in some cases, the merchants may not maintain accounts at all. We do not believe that the authorities desire to reduce things to such a pass but since we have disclosed some facts as we have known them, we hope they will take the necessary action.

If the Income tax Collector actually feels that the Auditor's reports are deficient in some respects, the only right course would be to lay down specific instructions for the guidance of Auditors as to the various points on which they must report. The Indian Companies Act clearly gives these things. We hope the authorities will kindly consider our suggestions and take the steps needed to give effect to them and to prescribe the form in which it is possible in which the Auditor's report should be made so as to obviate the necessity of entering into further correspondence with the Auditors or summoning the accounts and vouchers of the Assessors already audited for production before the Income tax authorities. The proposals, when duly considered and given effect to by the authorities in the right spirit, will not only considerably facilitate the work of the Income-tax Officers and the Auditors but will also encourage the Assessors in maintaining proper books of account and in getting them duly audited periodically. The general impression of the

Mercantile Community seems to be that they will be obliged to produce their books before the Authorities in spite of the Auditors Report. We trust that the matter will receive the sympathetic attention of the authorities.

The Co-operative Movement

The great value of the Co-operative movement lies in the fact that it not only teaches men to help themselves but sets no dividing line between national and personal interests. It is the noblest movement to promote the common good of man and to elevate him to a higher and nobler plane in life. It is a voluntary organisation of men consciously formed for securing a common end. Now, a Co-operative society is a body of consumers who undertake to provide the goods they require for their own use. They themselves find the necessary capital and direct the whole business of management. The profits or losses of the enterprise affect the whole Co-operative Community. In this way co-operation plays a large part in developing the industries of a country. It also teaches the intelligent organisation of industrial forces. As the chief aim of the industrial development is the economic well being of man, this can best be achieved by introducing the federal principle in uniting isolated co-operative societies and thus making a great national organisation. In India this movement needs to be spread far and wide its scope and object must be explained by a body of devoted workers so that, in the course of a few years, the spirit of Co-operation may permeate every town and village, exercising its beneficent influence and leading men to practical work.

We are tempted to these reflections on a perusal of Mr G. K. Devadhar's address on "The Message of Western Co-operation," delivered under the auspices of the Bombay

Central Co-operative Institute, with H. E. Sir George Lloyd in the chair. Mr Devadhar, M.A., has done immense practical service in developing the Co-operative movement in Western India and has devoted several years in various fields of Co-operative activity. His recent visit to Europe gave him an opportunity to observe the important features of the movement in the West. He has taken considerable pains to study the problem in England, Scotland, Ireland and Denmark. Anything that comes from him on this subject deserves the earnest attention of those who are anxious to see India occupy her rightful place among the nations of the world.

The stream of Co-operative effort in the West, say Mr Devadhar, is seen to run into channels quite different from those in which it runs in this country. Distributive and productive Co-operation occupies the field in England and has given that country a leading position in the World. In Ireland and Denmark, Co-operation has improved the agricultural outlook and has helped the development of agricultural industry. The Co-operative movement in the United Kingdom has developed into colossal proportions there being roughly 4 million members with a total capital of over one hundred crores of rupees their turnover amounting to over 300 crores of rupees in 1917. Mr Devadhar says that the progress in India is not negligible. There are 26,400 societies with a total membership of 10½ lakhs and the amount of the working capital stands at 14½ crores. The leading feature of the Indian movement is the large number of financing institutions, due to the great need of the agricultural population for cheap and facile credit. In India, the intelligent public have not taken a large part in this movement but what has hitherto been achieved in this field, has been due to Government's help and administration.

We have not yet employed the methods of propaganda which have been successful in the West in order to popularize the movement. Mr. Devadhar is of opinion that the Indian Government and leaders of public opinion should organise parties or Commissions of well equipped agriculturists to pay visits to other countries to acquire additional knowledge. Mr. Devadhar concludes his informing address with the following stirring appeal:

"Let me, lastly, appeal to my countrymen and countrywomen to recognise the practical, economic and social value of co-operation as it is seen in the West. For common good all have to be brought to a higher level and that task can best be achieved by adopting the method of co-operative education, is one of the efficient means. The creed of co-operation wants its volumes for this emancipation. It is a work of resurrection also. It is a noble task, and like all noble undertakings, it pleases those that serve and those that are served."

Indian Exhibition, Bombay

At a meeting of some of the leading citizens of Bombay held on the 17th April 1919, the question of holding an Indian Exhibition in Bombay was considered and the following resolution was passed:

"That a Sub-Committee be appointed to prepare a general report on the question of holding an Exhibition in Bombay and submit the same to the General Committee at an early date." The Secretaries of the General Committee are Messrs. R. F. Gregor Pearce and J. K. Mehta. The Committee met on three occasions and appointed finance and site Sub-Committees to report on the matter. After considering the reports of these Committees, it was decided to recommend the holding of an Exhibition in Bombay in 1922 on the open space between the race-course and the Hornby Vellard. The proposed Exhibition should not be merely a tin show

nor a show restricted to the Exhibition of machinery only but must provide side-shows. As regards finance, it was not possible to determine the amount that will be required but Rs. 75,000 must be raised to invite two experts from the United Kingdom or the United States of America to report upon the Exhibition giving detailed estimates of revenue. A deputation of the Exhibition Committee met Sir Thomas Holland and Sir George Barnes on the 6th June 1919. They thought an International Exhibition out of the question but favoured an Indian Exhibition with side shows attached. They laid stress on the desirability of Provincial and District exhibitions every year. They were against the idea of holding the Indian Exhibition outside Bombay.

Para Rubber Seed Oil

Mr. B. J. Eaton contributes a very interesting article on the above subject which appears in the December number of the *Tropical Agriculturist*, in the course of which he points out that a detailed report has been received from Messrs. Rose, Downs and Thompson, oil machinery manufacturers of Hull, on a consignment of 26 tons of undecorticated rubber seed despatched by the Director of Agriculture. The whole seed was extracted by Messrs. Wray, Sanderson & Co., Ltd., seed-crushers of Hull, in chemical extraction plant. An examination of the figures reveals that even the cost of freight on the seed was not covered by the amounts realised by the sale of the oil and meal, after deducting costs in England. Apart from the criterion of the value of the oil, as indicated by the price realised, a firm of paint manufacturers reported that it might be used to some extent as a substitute for linseed oil, though it would not be equal in quality to linseed oil as a paint oil or for varnishes. The firm valued the oil at £ 20 per ton in normal times compared with £ 30 per ton for linseed oil.

NEW JOINT STOCK COMPANIES.

By Dewan Bahadur K. Krishnaswami Rao Ayl, C. I. E.,

IT is very gratifying to find that a large number of Joint Stock Companies have been or are being floated in all parts of India, with unprecedentedly large capital, for commercial and industrial purposes. One most remarkable circumstance about them is that in the prospectus issued by the promoters, expectations of a very high sale of dividends to the would-be share holder and of fees to the Directors are held out.

Considering the many disadvantages under which the Indian Companies have to work, one is tempted to ask whether the promoters of these new Companies have deeply thought over the manifold difficulties in the way of realizing huge profits which alone would warrant the large expectations held out. India may supply the raw material required for manufacturing purposes. The Indian labour which used to be cheap has begun to show an unmistakable tendency to become dear. The labour strikes which are becoming common and the formation of labour unions afford strongest proof of this tendency. The machinery required for manufacturing purposes have to be imported into India from Europe or America at a higher cost than in pre-war times. The high class of skilled labour has to be procured from foreign countries at a cost which in view of the prevailing economic conditions, is likely to be exorbitant if not altogether prohibitive. The prevailing high prices and the rise in the wages of labour cannot fail to exercise, to a large extent, their influence in increasing the price

of raw material. The State demand for enhancement of taxes which in view of the coming constitutional changes in the Government of this country and the consequent increased cost of administration, must rise, should not be overlooked. Then there is the most perplexing currency problem which seems to baffle the most acute and trained intelligence of the best financial experts, in their attempt to solve it. There can be no greater commercial evil than an unsteady currency. Above all we have to face the aggressive competition of foreigners who in point of wealth, scientific and technical knowledge and actual experience, are by far superior to us.

In view of all these circumstances, the rate of profits assumed in the prospectus of the new companies, seems to be extravagant. It is wiser to promise a moderate dividend or remuneration, subject to increase with reference to the realised profits. Nothing is more calculated to discourage commercial and industrial enterprises than large promises and small performances. A small promise faithfully performed will secure public confidence, and in the long run, will prove beneficial to the concern. In this transition period too much caution cannot be exercised in estimating the prospective profits of a new business. Failure will retard progress for many decades to come. Generally speaking, investors in shares of Joint Stock Companies will be content with an annual dividend of 6 to 12 per cent provided the prospect of getting it regularly is placed beyond doubt.

FOREIGN TRADE AND MIDDLEMEN.

BY MILLI METRE

THE three main branches of Commerce are (i) production, (ii) transport and distribution and (iii) sale and finance. Whatever tends to cut short the route between the producer and the consumer is to be desired because in the process the manufacturer or the consumer or both, save for themselves the merchants' profits. This is the case in those instances in which big firms look forward to making all their profits by the sale of their own specialities and charge their customers for all the other incidental expenditure it cost. This is possible only if the said firms have a packing and export department of their own, otherwise the moment the help of another organization is sought, the charges and profits of the latter will have to be paid directly or indirectly by the consumer. Firms like the United States Steel Products Co., have their own packing and export department and having their agencies throughout the world, they can combine these and operate together in a manner that gives them an advantage in the open market. They approach the consumers direct and the public stand to gain by this method.

Let us now look at the position of the middlemen. There are three views about this, the two extremes and the middle one. One view is that the manufacturer having to devote his principal attention to the purchase of his raw material, the management of his labour and the efficiency and operation of his machinery, cannot be expected to devote his energies to the marketing of his wares. Neither should he be able to afford the capital outlay, because he ought to aim at employing his resources in the conduct, upkeep and extension of his factory.

Another view is that the manufacturer ought to control the transport, distribution

and sale of articles in his own country, but should stop at that leaving the export trade in the hands of those who make a speciality of that line of business and are competent to study the needs of the world's markets.

The third view is that the manufacturer should leave the marketing of the wares to the merchant who acts as a middleman between the producer and the consumer. In this connection the merchant claims that he serves a legitimate purpose when he relieves manufacturers of work which their organisation does not fit them to perform, is for example, by financing a great number of small sales. Producers can also afford to take less money for the goods when these are sold in large quantities at a time. Picking, book-keeping, and collection of outstandings are all made less expensive, and of course the cost of advertisement is reduced. There will be fewer bad debts not only is it easier to ascertain the solvency of one firm than that of many, it is also easier to obtain precise information about a large firm than a small one. A wholesale trader buys in large quantities and breaks bulk into small lots to supply retailers who cannot afford to buy except in small parcels. The middleman thus renders to the manufacturer a service in return for a reduction in price which he claims. Wealthy merchants often bespeak of the whole output of a factory and make an advance payment which assists the manufacturer in buying his raw materials advantageously. Thus a merchant becomes a necessity in the export trade and not a luxury as somebody recently put it in the columns of the *Karnataka*.

The whole business of export-trade is so complicated that many persons who are accustomed to get the things they want by

simply mailing an order and making arrangements for payment scarcely appreciate all the intricacies involved in the matter. A number of merchants and middlemen play their part and contribute their share in these export trade transactions. Let us take an instance. A certain man in India wants to purchase a particular machine. He writes to the manufacturer to send him the machine so as to reach him at a particular railway station in India. Beyond agreeing to pay all the incidental charges the Indian does not mention anything else. He simply wants the machine at his own railway station and he does not care how it arrives so long as he is not asked to pay a most exorbitant price for it.

Now the manufacturer, unless he has a special export packing department under him writes to a firm to come and pick it. Then he sends the picked machine in his own lorry to the nearest Railway Station, or writes to a carters' agency to do the thing for him. The Railways take the thing to the nearest port. In the meanwhile the manufacturer would have advised an export merchant about the despatch of goods to the port. The merchant goes to a shipping agency either direct or through a broker and arranges for the shipment of goods. He also goes to the insuring agents to insure the goods against all losses. He then writes to his agents in India and advises them about the despatch of goods and this firm in India will have to clear the goods at the Indian port, pay the customs and arrange to forward the goods to the final destination. Money will be collected in England against shipping documents through bankers or some other arrangement will have to be made.

Division of labour and specialisation have been carried on to such a degree of excellence that in the export trade of a country especially, quite a number of people handle

an article before it reaches its destination. The middleman plays a very useful part in these dealings. It should also be remembered that the middleman not only acts as a sales-agent to the manufacturer but also as a buyer of his raw materials from another country. In both these transactions he claims with considerable reason that being a merchant, he is always ready to buy and sell at a price and is the steadying influence that prevents fluctuations in values, that he has special organisation and equipments, that he gives, as mentioned above credit facilities to his buyers, and from long study he understands their wants and can anticipate their needs, and also that he makes it a point of his business to study the freight insurance and exchange markets as well as the markets for the commodities themselves. Thus a strong case is made out for the merchant in the foreign trade.

It will be worth our while before closing, to consider the prevailing practice in India amongst big ware houses that stock an infinite variety of goods. Amongst them it is usual to indent for things through some merchant house in London or some other city, specifying the things or particular makers of goods, or selecting them out of a catalogue or sending samples. In many instances the selection of the particular goods is left to the merchant house in London only giving a sort of general description of the thing wanted. Articles like fountain pens, watches, electric bulbs, oil engines, cement, scientific instruments, chemicals, etc., are specified either by the name of the maker or by the well known brands. Tweeds, serges, longcloth etc., are indented for according to patterns. Sheet iron, rails, pipes and such articles are indented for after giving specifications with regard to weight and other standard tests, latest fashions in dress, the most popular perfumes etc., are left to the

discretion of the merchant on the spot. Machinery for any particular work is indented for either leaving the choice to the merchant, or requesting him to send different specifications on the machinery by different makers with his own recommendation. If it is a big purchase, the merchant is asked to follow a particular method of procedure, say, he may be asked to call for tenders and forward them all to India for judging and selection.

A general indent from such big warehouses in India may often comprise goods from a hundred different suppliers in England. The merchant by collecting the goods into one or more shipments included on the bill of lading in each case effects considerable saving for the warehouse in India in freight by thus avoiding a number of separate shipments for the same warehouse on minimum freight. It

frequently occurs that goods ordered from particular houses are not big enough to make a case so the merchant collects them at his packets for despatch in one case together.

Taken all things together it is to the advantage of the warehouse to have an agency of his own in England and if the thing is not possible, the next best thing to do is to have a reputed merchant house in England to act as agents for him.

Whatever may have been the agitation of the interested persons for diminution of the middlemen, the modern tendency seems to be to form close alliances amongst manufacturers, merchants, and shippers. By allying themselves thus, the manufacturers find they are freed from the anxiety, outlay and risk of export trade which can only be carried on successfully by men who have made a speciality of it.

A COLLEGE OF AGRICULTURE FOR BENGAL

By Mr S Sinha B Sc (III) M A G A

EVERY one of us will admit that it is under the benign rule of the British Government that our people are getting education. The number of educated people is gradually increasing and the number of degree holders during the last five years, has so much increased that quite a large number of them is sitting unemployed, and that, under the circumstances, it is impossible to provide every one of them with suitable appointment. Our education has been of such a type that we cannot do anything but look for services. Unless we make expansion of industries in our country and unless we give vocational education to our young men, more poverty will be reigning in India and starvation's ghost will be seen a foot apart upon the soils of India. Some of our leading men are thinking of this problem. Sir P. C. Roy has

been lecturing on "Bread problem". He thinks that there have been too many lawyers, the bar is overcrowded, there being no room for any new lawyer in this profession. The Law College should be closed say, for twenty years.

What will our young men do in order to earn their livelihood? Should they 'study medicine'? That is also impossible as we know that thousands of students fail to get admission in the Medical Colleges of Calcutta. At the Sibpore Engineering College, there, too, the seats are limited. Then there is one course left to our young men, and that is to take "Farming as a profession". But where is the College where our young men can get both theoretical and practical training in agriculture? People may say "why, there are colleges at Sabour and Pusa". I visited

those colleges. The buildings are large, but the number of regular students studying there is very small. Do the passed students of those institutions take farming as a profession? No. Then what is the general ambition of those students? They look for Government post. But why? Because they were not made "Farmers" after so called practical farm work. A professor of the T. N. Jubilee College, Bhagulpur, formerly a professor of the Berhampore College told me that two of the men trained at Pusa had been employed in Provincial Civil Service. A professor of the Baroda State College, formerly an Assistant Professor in the Calcutta University College of Science visited Pusa. He condemns the expenditure on agricultural institutions as "very lavish" and refers to the popular indignation at public money being squandered on "fattening a few people with little good result to national development" (Vide the *Bengalee* Aug 29, 1919 and the report of the Calcutta University Commission). A professor of the Holkar College, Indore, writes, as published in the report of the Calcutta University Commission "These departments which are conducted by the Government, agricultural institutes etc., have signally failed so far to give beneficial results." I wonder whether my countrymen know that the Pusa Agricultural Institute which is considered to be the best agricultural institute in India was started by an American Millionaire, Mr. Henry Phipps who gave a donation of \$150,000. To this sum our Government added a bit. If Mr. Henry Phipps would have given the sum to a committee composed of official and non-official, how much better the Pusa Institute would have been to day. Some Englishmen as members of the Calcutta University Commission came crossing the ocean to re-construct the Calcutta University. We are glad to note that they recommended establishing an agricultural college at Dacca which will

be affiliated to the Dacca University. And I think that the future of Dacca Agricultural College will be in the same category as those of the agricultural institutes at Sabour and Pusa.

But whatever it be, we rather wish to see an agricultural college established and affiliated to the Calcutta University. We wish many things but for lack of general sympathy and co-operation our plans get frustrated. I have a plan in my mind and am making it public through the medium of the newspapers. It is for our countrymen to accept or to reject.

Many Indians went to America with scholarships from the Association for the advancement of Scientific and Industrial education to get this training in Agriculture, many of them have returned as agricultural experts, most of them for want of capital could not "go back to the soil", some of them, I hear, have returned to America after being disappointed. I will suggest to our rich men and philanthropists to establish an Agricultural College in Bengal (location will be decided by consulting with several agricultural experts) which college will be after the model of the American State Agricultural Colleges, not in all respects but in many respects. The Staff will be composed of men trained in America, if we be short of such men then we will give appointments to the graduates of other Universities. Why do I give preference to the graduates of the American Agricultural Colleges? I answer. In America all of our common cereals are grown, and we study them. America has made the greatest development in fruit farming. It is Luther Burbank, the "wizard" of plants who created stoneless peaches in America. American Agricultural Colleges are the best in the twin world. Nothing is done in a haphazard way. Some of my readers may think that I am boasting of the American Agricultural Colleges, because my *Alma mater* is illi-

nois It will be sufficient to give here one or two remarks made by the Europeans about the American Agricultural Colleges and their methods of farming Mr Frank G Carpenter wrote under date, Calcutta, May 20, in issue of the 19th June, 1910 of the 'Chicago Sunday Tribune' that the Secretary, Mr Miller spoke highly of their (American) work along agricultural lines saying that the United States lead the nations and that India was taking lessons from the Americans Mr Miller also admitted that modern agricultural movement in India was begun by an American, Mr Henry Phipps of Pittsburg

L. Friederikson, the Danish State Commissioner, returned after devoting a year to the study of agricultural methods in America He said "I should advise anybody to take a trip to the United States He will learn more in America in one week than a whole year travelling in the old country"

"The Farmers of the United States are more progressive than the farmers of Europe and are better farmers The European farmers do not have as good homes, as good furniture nor as much reading matter as the farmers of the United States have"

Will our countrymen believe that a student who graduates from the agricultural colleges of America passes during four years not less than forty different examinations before he is "capped?" A student trained in American agricultural college becomes an "all round man"

Now I come to say something on the proposed agricultural college The length of the degree course will be for four academic years During the first three years agricultural subjects will be taught, and examinations will be held by compartments, and in the senior year i.e., at the 4th year students will be allowed to specialise only in one sub-

ject I do not wish here to enter into details as to the names of the subjects that our students will study during the first three years and the names of the subjects that they will specialize in the fourth year. If I find my countrymen and members of the Syndicate willing to accept my scheme then I can draw out an outline of subjects to be taught in the 1st, 2nd, 3rd and 4th year classes One can understand what the nature of the subjects will be from the various departments that I have mentioned in the next paragraph

There should be a farm attached to the college Besides lecture and laboratory work for the regular students and short course of apprenticeship the work can be divided into following departments —

1 The Agronomy Department 2 The Animal Husbandry Department 3 The Dairry Department 4 The Poultry Department (The Hindu students will have objection in working in this department, for them the work will not be compulsory) 5 The Horticultural Department 6 The Farm Department 7 The Mechanical Department 8 The Biological Department 9 The Plant Breeding Department 10 The Soil Department 11 The Bacteriology Department 12 The Veterinary Science Department 13 The Sericulture Department 14 The Surveying Department 15 The Purnoris Co-operative Demonstration work Department Students will be sent in rotation to these departments and will take their turn at a variety of jobs clear and dirty easy and difficult without favour or distinction

A limited amount of time devoted to practical operations on the farm and in the various departments enumerated above, will be well spent especially by those who have not had much practice in farm work The students will be paid for their labour, and they can

spend the amount so allowed in paying board bills, buying clothing, books etc. In this way the profit for a good attendance at the College will be ensured. There is no doubt that the products of such a new institution will be of greater use to India than the class of students which are coming out to day from Pusa and Sahour. The entire farm work cannot be managed by regular students labour, and there may be some such work which our students will hesitate to do or are unaccustomed, so we need few extra hands, I mean coolies, but our aim will be to engage them less.

In this College there should be no line of demarcation between a farmer and a Director or Principal or Professor. The farmers should be given the liberty of visiting this college and the experimental farm. We will arrange to hold farmers' excursions from each district during the growing season of the crops to the proposed college. We in co-operation with the Railway company make arrangements for special train, for bringing the farmers and their families from every

part of the Province at a reduced fare. When the parties will arrive, the Director of Agriculture, the Experimentalist of the Farm, Professors, student assistants will guide the visitors and explain all the experiments that are being made on the plots. The farmers will hold discussions right on the plots, and the guides should help them in solving the various problems. This sort of enterprise has done immense good in American agriculture. We think that this is one of the best ways of teaching scientific agriculture to our ryots especially those who have no time to attend long course or money to spend on college education.

If my countrymen, rich men and leading educationists think that an agricultural college founded on this model will be successful, and that the bread problem can be solved to a great extent in this way I will request them to co-operate amongst themselves and to be busy in establishing such a college. The wealth of India lies in her soil, and her strength lies in its intelligent development.

THE PAINT INDUSTRY IN INDIA.

IT has great possibilities in India. The consumption of paints and colours is rapidly extending in all parts of the country for building materials, carriages, vehicles, lamp posts, bridges, furniture, and the like, but it has not yet progressed as much as is possible. Paint has two main uses first of all for colouring material, and secondly for preserving it. It is made of a mixture of oil turpentine and what are called pigments. These are added to give the desired colour. The most important material is linseed oil. This is obtained by pressing flax seed which is grown in several parts of India. A large part of the seed is exported to Europe and pressed there, the cake or what is left being sold as cattle food. As there is little market for this in India much is sent to Europe. Still there has grown up in India a very flourishing oil pressing trade and as well several factories

can refine and boil oil. Thus as in the case of soap, both the cultivator, the manufacturer, the workman and the consumer—all are interested in the development of the oil pressing industry. Another material which is used to dilute the mixture of oil and pigments is turpentine. This is obtained from the resin of certain kinds of pines. The turpentine industry in India is of quite recent origin, indeed in sixteen years the production of turpentine increased from 1,000 gallons to 120,000, and it is expected to go on increasing. The most encouraging results have been obtained from the Forest Department factories at Jallo in the Punjab and Bhowali in the United Provinces, and still more is hoped for from the new factory at Bareilly. So zemindars who own pine forests have an interest in developing their property.

(*The United Provinces Journal*)

INVENTIONS AND THEIR APPLICATION.

By Mr B S Ramaswami Ayyar, B A , L T

Their Origin

WHEN the 19th century and especially the latter half of it is teeming with inventions of all kinds, one is likely to ignore the Origin of inventions and the progress and improvement made therein century after century. It seems essential therefore to say something of their originitive outset.

Man has progressed through ages in utilising the forces and products of nature for his own ends of accumulating and transmitting his knowledge by tradition or writing and thus leading to his present Supremacy. The existence of modern races in low stages of culture facilitates the Study of the origin and evolution of the implements of prehistoric times. Both sticks and stones were primarily employed as weapons, but the later developments of both forms were seen in numerous directions. Man progressed gradually from the position of a tool user to that of a tool maker. The course of evolution is again from stone to copper, from copper to bronze and from bronze to iron. So then all the stone implements have been replaced by iron ones. The primitive occupation of hunting induced man to have some weapons for defence not only for bringing down the game but also for fighting other hunters who might try to seize the spoil. The herdsman is really a step in advance to that of the hunter. But it is the agriculturist who must be regarded as the founder of civilisation. The earliest forms of vegetable foods were those secured by the mere labour of plucking. There has been a graduation of difficulties before agriculture on a large scale was introduced. New implements and tools were needed. From the pointed digging stick to the pick and hoe

and from these to the simple plough with its later improvements for cutting into the soil, freeing it from underlying parts and turning it over in a regular and definite manner we have in uninterrupted line of evolution of invention which has led to the highest types of modern plough. The last great change in the character of weapons was made by the introduction of gun-powder. The new weapons are far more deadly than the old, and are coming into world-wide use. The first thing most savage tribes borrow from civilization is the use of fire-arms, and in all probability will soon be things of the past.

The discovery of fire is one of the great landmarks in the history of the world. The premature method of obtaining fire rendered other methods superfluous except where matches are expensive or unobtainable. The discovery of fire introduced, or rather satisfied a new set of wants. Man has been described as a cooking animal. It is true that in many tribes devour meat raw and rotten, but nevertheless the desire to render food more palatable by cooking has played a large part in the improvement of utensils. The discovery of pottery is often taken to imply a very high state of progress, and this is perhaps true. The pottery of primitive people is shaped by hand alone and the potter's wheel is only a later introduction.

Next the arts connected with *clothing* may be considered. In many instances the surface of the skin is regarded as a favourable situation for the painting or tattooing of ornamental designs, which often have a totemic or tribal significance. The idea of clothing probably originated at any rate in warm climates in intimate association with the

decoration of the body either in the above mentioned way or by means of ornamental girdles and pendants. The art of spinning again has been developed very much that it has given rise to the establishment of spinning mills. As regards dwellings man has advanced from the stage of building shelters of leaf boughs to that of building modern living houses. Taking the case of *locomotion*, and *transport*, the invention of the wheel made rapid locomotion possible under ordinary circumstances. From the Dug out to the Dead-nought is a far cry. A word may be said about the musical instruments. From the twang of the bow string of the hunter to the brilliant performances of the modern pianist is an advance in the art of music which has been dependent upon the associated evolution in the instruments employed. Again in the region of *decorative art*, such as the carvings or paintings on weapons, tools, houses etc. there is definite proof of the continuous nature of the steps by which the evolution of man's creations has proceeded. In commerce again there is much of interesting history from the system of barter to the introduction of money as a medium of exchange. So also in the system of *counting*. Lastly the history of the arts of *writing* and *painting* from the hieroglyphics to the present alphabet on the one hand and from the system of using pise blocks to the modern improvements will afford an interesting reading.

Application of natural agents to Industry and Commerce—It is noteworthy to study, after examining the origin of inventions, how the natural agents have been brought under control and applied successfully to the purposes of industry and commerce. It is the Modern Engineer that is somewhat responsible for this. So it seems better to say a few words about him before taking into consideration the forces he keeps under his control. He figures a little prominently in connection

with these inventions. As the conditions of civilised life become ever more complex, the engineer is of necessity compelled to devise newer and more efficient means whereby the available forces of nature may be applied in the service of mankind. Each improvement effected in any branch of engineering serves as a foundation for extension in other and widely different directions, and it is this essential element of interdependence that compels the engineer to acquire a comprehensive knowledge of every branch of his profession, so that he may be able to profit in his special work by the advances of others. The natural sources of energy are distributed in one condition or another over the whole world, but the practical value of source is determined by the nature and continuity of the supply and by the ease with which it may be transformed to a convenient and concentrated form. Of the present available sources the most important are the fuel, coal and oil, and water but there are other and greater sources of molecular energy which as yet are in the hands of the physicist and far beyond the reach of the engineer who would employ them. Of the many natural forms of energy water power lends itself most readily to industrial purposes, and where it exists in suitable quantities it is applied with very economical results to the driving of machinery, which may then be distributed to the other districts where water power is not available. Air-power also is used to a little extent for industrial purposes. Windmills are most generally employed for the pumping of water, the grinding of grain and other agricultural purposes, but their use is more or less limited to certain situations where the winds are constant. Owing to the limited distribution of air and water-power, and to the variable character of the supplies, only a small portion of the total power required for industrial purposes is obtained from these

natural resources, the greater portion being more indirectly derived from the combustion of solid and liquid fuels—coal, wood, peat and oil—the most important is coal, but for many purposes the use of oil is becoming very general such as for the direct driving of internal combustion engines &c. It may perhaps not be out of place to say a few words about the electric power and to indicate the principle involved in making the operation of the various machines understandable. The elementary principle involved in the construction of the dynamo, for instance, may be briefly stated thus—When the lines of magnetic force surrounding the poles of a magnet are cut by a loop of wire moved through them, a current is induced in the wire, and the flow continues in the closed circuit so long as the lines of force are being cut. Without describing in detail all the complicated particulars about these things, it will be sufficient to merely mention the fact that alternating currents are now extensively used for the driving of motors and also for lighting. One circumstance therefore which has great influence on the rise of manufactures in particular districts and towns is the kind of power used.

At first all manufactures are carried on by hand-power. This is a slow and laborious process. Those who have read George Eliot's 'Silas Marner' can easily form an idea of the conditions under which the English and Scottish hand-loom weavers worked. The next stage began when water-power was used to drive machinery. Under these changed circumstances the manufacturing population began to gather near running water, and to remove from places where this was not to be had. Rapid hill torrents give more abundant power than sluggish rivers winding over a plain. But power is not everything. The facility of transport also counts for much in order that a town may become a manufacturing centre. For instance the Mersey brings

Liverpool and the cotton manufacturing town of Lancashire into communication with cotton growing states of America. The next change in the distribution of manufactures arose out of the substitution of steam for water power just as the introduction of water-power attracted manufactures towards the rivers. So the introduction of steam-power attracted manufactures towards coal fields. Where iron occurs in combination with coal, this leads to a rapid increase in the number of industries and the density of population in a particular manufacturing district. Thus the iron manufacture is very important on the Lancashire coal fields where iron is found. The end of the 19th century witnessed another change which will greatly affect the distribution of manufactures in the present century. This is the introduction of electricity which is most cheaply generated by water power. Just as coal attracted industry to the coal-fields, so the introduction of electric power will attract industry back to the sources of water-power. That the chaudiere falls should light the city of Ottawa and drive its electric cars seems natural enough in a large and rapidly growing city. The same power can be applied to its manufactures which have therefore every chance of rapid development. The cataraacts of the Nile will probably be used to generate electricity for transport, lighting and general industrial purposes. Grand schemes are pending in connection with the Sivsamudram waterfalls in the Mysore State. But the great source of electric power in the world will eventually be the Niagra falls. Since it has been found possible to transmit electric power for long distances, there is hardly any limit to the possibilities which the unused power of Niagra represents.

Modern inventions

After the 15th century each century was marked by a definite advance. The 17th

century is remarkable for the proposes of physical science and mathematics such as the invention of the telescope by Galileo, of the barometer by Torricelli, of steam engine by James Watt etc. The 19th century in the rate of its scientific and economic progress claims to be above all its predecessors, the century of inventions, especially the second half is more noteworthy than the former. Distance has vanished in comparison with the past, and time has been prolonged, because so much more can now be done in a given time than could be done even a decade ago. And it is science that has to be thanked for it all,

since every one of these time—saving, labour saving devices, means of rapid communication and transport etc., is the culmination of the ceaseless endeavours of generations of Scientists. The most certain way of expanding our manufacturing activities by producing new products, improving existing ones and attaining greater efficiency in our factories, is to realise this dependence of industry on Science, and to employ the technologist to a larger extent in the factory. The utilising of waste products by the chemist is one familiar example.

PROPOSED INDUSTRIAL MUSEUM.

By Mr R. Thirumunthi Rao, B.A., L.T.

IN their Press Communiqué dated the 27th August 1919 the Government of Madras have published the letter of the Director of Industries together with annexures, regarding the proposal to establish a permanent Industrial Museum in Madras, and have invited public criticism thereon.

The Viceroy and the Secretary of State have frankly declared in their report on Indian Constitutional Reforms that English theories regarding the limits of state intervention in Industrial Development are inapplicable to India and that if the resources of this country are to be developed the Government must take action. In their opinion, India will consider herself entitled to claim all the help that her Government can give to enable her to take her place as a manufacturing country. They urge a forward policy in industrial development to give India economic stability, to satisfy the aspirations of her people, to provide profitable investment for Indian Capital, to correct the evils of a too literary education and above all to divert

Indian thought to practical ends to qualify the people to shoulder the additional responsibilities which the new constitution will lay upon them. They have also clearly pointed out that the Development of India's natural resources becomes a matter of Military necessity under modern conditions of war and there can be no reason for hesitating to move forward boldly in a matter in respect of which considerations of military security, political expediency, and economic advantages are coincident and are in agreement with the interests of the Empire as a whole. These considerations led Lord Hardinge's Government to recommend the appointment of the Indian Industrial Commission and the present Secretary of State to announce a change of policy.

The Industrial Commission after elaborate enquires has recommended that the work of the provincial Department of Industries should be classed under the following heads —

(1) The direct encouragement of industries including a large share in industrial research

work. The provision of technical advice and assistance to industrialists, the examination of applications for special concessions and the grant of loans to develop cottage industries.

(2) The collection and distribution of commercial and industrial intelligence, the work of passing Government Indents and of purchasing and inspecting certain classes of Government Stores, the organisation of markets for local products, the conduct of special enquiries and industrial surveys, the holding of industrial exhibitions and the management of Commercial and industrial museums.

(3) The control of technical and industrial education, funds for the purpose being provided for from the budget of the Director.

(4) The control of the staff employed for the local administration of the Electricity, Factories and Boilers Acts, and the furnishing of advice to Government on the industrial and Commercial aspects of the Mines Act and of the rules for mining leases and prospecting licences.

In pursuance of the policy enunciated by Government and supported by the Indian Industrial Commission, the Director of Industries has recommended to Government the establishment of a permanent Industrial Museum in Madras and the absorption by it of the Victoria Technical Institute. His idea is to make the Museum the nucleus of the Intelligence Branch, which is to be mainly composed of an Inquiry Bureau, a Library and a Museum. The library will contain Commercial, Industrial and Technical literature and the Museum will be intended for the exhibition of the raw products of this country and the goods manufactured with them either in this country or outside it. If a central Museum is established the collections in the Museum may be sent as exhibits to the fairs and exhibitions held in the mofussil and their

educative value will thus be enhanced. The Director says that till now the Department has professed to contain an Intelligence Branch and to answer technical, commercial and industrial enquiries and in future the Intelligence Branch will serve as the link with the Imperial Trade Commissioner and with the Director general of Commercial Intelligence.

The nomenclature of 'Industrial Museum' suggested by the Director to the proposed institution will be more suitable than 'Commercial Museum' but we would prefer it being called 'Madras Museum of Commerce and Industry' as being more appropriate being more comprehensive.

We agree with the Director that the Victoria Technical Institute may be more advantageously absorbed by the Department of Industries. It was formed in the year 1818 and placed in possession of the Victoria Jubilee and Memorial funds with the extremely ambitious object of imparting artistic, Commercial and industrial instruction to persons of either sex by establishing technical libraries, museums, colleges, schools and workshops, by holding examinations in Technology and granting certificates, by buying and selling articles and similar means. Unfortunately owing to lack of funds and proper direction of work by specialists, the Institute has been forced to limit its work merely to the buying and selling of articles of artistic value. The President of the Council, has expressed keen dissatisfaction with being compelled to work in so limited a field and has asked for Government help to enlarge its activities and increase its usefulness. If it was forthcoming he thought it would be necessary to change the constitution of the Council which at present consisted of amateurs, and busy men in other vocations. The work of the Institute is so little known to

the public that when Mr Morrison suggested that gentlemen interested in particular crafts and industries might conduct parties round the exhibits to induce them to take some interest in it, the President expressed a doubt whether they could at all get people to come.

Under these circumstances, considering that the Institute has been guided till now by amateurs and has not produced any result worth considering it may be handed over by the Public without any hesitation whatever to the charge of the whole-time Director of Industries for increasing its usefulness in promoting artistic handicrafts and cottage industries in particular. We are, however, very thankful to the Committee of the Institute for the encouragement they have given to Indian handicrafts and we have nothing but admiration for their having achieved that measure of success in their self-imposed but well-nigh difficult task of preserving from extinction the decaying artistic handicrafts of South India.

We suggest that in the proposed Industrial Museum, should be exhibited all articles of import and export and all vegetable, animal and mineral products of economic importance available in India and in particular South India. Detailed information should be available to the public regarding the composition, suitability, extent and distribution of raw materials suitable for the manufacture of dyes, soaps, candles, pottery, cement, glass, paper, mineral acids, fertilisers, leather &c., and the smelting of iron, copper, lead and aluminium. The main object of the Department should be to supply general information to the public regarding the commercial utilisation of the economic products exhibited in the Museum. With a view to this, every

promising new product should be investigated in the Research Laboratories of the Imperial Institute or elsewhere on a large scale and the results of such investigations carried out by Technical experts should be made available to the Public in the libraries attached to every one of the Indian Industrial Museums. To avoid waste of effort and overlapping of work all such museums must be in close touch with each other and preferably controlled by a single organisation. When the Hydrographic Survey of the country is completed it should be possible for the Director-General of Industries to elaborate schemes for the most efficient application of the Hydroelectric power that may be developed.

The Department of Industries should co-operate with the Department of Agriculture in improving the quality of our textile raw materials, cotton, wool and silk. The Director of Industries should start without any delay some cottage industries as a corrective to the inevitable evils of the large scale industries which are now cropping up like mushrooms and among these may be included the manufacture on a small scale of glass, matches, pencils, handmade paper, paints, varnishes, sericulture, agriculture, mule working, toy-making, rice making, knitting, hand loom weaving and the like. The Director of Industries should work in close co-operation with the Registrar of Co-operative Societies and vigorously spread cottage industries by actual demonstration to the public and by their introduction in schools in suitable localities.

(We do not agree with our correspondent in the view expressed by him. A Commercial Museum organised by a private enterprise on the lines of the Bombay Commercial Museum is welcome. A detailed scheme appears elsewhere. Ed.)

THE MADRAS COMMERCIAL MUSEUM.

By **Organiser**

TWO years ago, the Bureau of *Commerce & Industries*, Post Box No 353, Madras was brought into existence by Mr G Narasimham as an Institution for the encouragement, organisation and development of Indian Industries and Commerce and with a view to supply information to persons interested in Trade and Industries etc., and much useful work has been done by way of answering enquiries received from the different parts of India. At the same time, the idea of organising and conducting a *Commercial Museum* as an adjunct to the Bureau was also circulated throughout the country and advertised for a long time in the "Hindu" and elsewhere. Numerous letters have been received emphasising the need for such a Museum along with a few specimen articles for exhibition. But the idea was put off to a more favourable time with the intention of making it a permanent and more beneficial institution.

2 During the course of interviews which Mr Narasimham had with Mr Innes, I C S, and Mr R W Davies, I C S, both Ex-Directors of Industries, the necessity and usefulness of the Bureau and the Commercial Museum were considered and discussed and the idea was much appreciated by them. It may not be out of place to refer, in this connection, to the interpellations in the Local Legislative Council in the matter of establishing a *Commercial Museum* at Madras.

3 The objects of the Bureau are to diffuse knowledge and information and to organise and manage institutions for the purpose of developing and encouraging Industries, Sciences, Arts, Manufactures and Commerce by --

(1) Organising and maintaining a *Commercial Museum* at Madras

(2) Starting Journals or Magazines

(3) Establishing a Library and Reading Room, Laboratory and Research Institute and Polytechnic Institute

(4) Organising meetings and the distribution of pamphlets, bulletins, catalogues etc.,

(5) Creating openings for the employment of capital and labour

(6) Granting scholarships, rewards or honours for services rendered for the productions, inventions, discoveries or improvements tending to increase trade, industries and commerce and the material wealth and prosperity of the country.

(7) Bringing to the notice of the capitalists enterprises in which they might invest money and establishing an employment Bureau for trained hands in such enterprises.

4 Owing to the suspension of all foreign trade for want of shipping facilities during the war and the consequent inactivity of the Industrial life in the country and the abnormal rise in prices, India has suffered to an extent unknown or even undreamt of in the past years. The serious economic situation and famine conditions prevailing all over the country and the tremendous unrest among the labouring classes is a result of the termination of the war demand the closest attention and the united action of the Industrial and Mercantile Community as well as the ablest thinkers and public workers of India. India is at present exposed to the keen competition from the foreign countries which have been better organised, and are more enterprising and prepared to capture the markets of the world. While recognising the superiority of the foreign goods and the up-to-date methods employed by the foreign competitors in the

manufacture and the marketing of their products, one must admit the fact that the Indian market is being constantly flooded with the foreign goods, in many respects of cheap and inferior quality with the object of "dumping". The Indian manufacturer is ignorant of the exact sources of raw materials and machinery for industrial purposes while the Indian merchant does not know where and what articles of interest are made. For many years to come, India must continue to depend upon the foreign made goods for most of her immediate requirements but she must simultaneously make every possible effort to educate her people on the possibilities of manufacturing at least her own requirements in the country.

5 Hence, the organisation of a *Commercial Museum* in Madras becomes an urgent necessity as it will demonstrate to the enterprising merchants and manufacturers here in a practical way what goods are made in this country, what raw materials are available here, what the defects are in the Indian goods as compared with the foreign goods competing in the Indian market what steps should be taken to study and rectify such defects and to find suitable markets for the Indian goods, both raw and manufactured. It has been recognised in all civilized countries of the world that the most effective method of educating the people and of developing their industries and trade consists in the establishment of Museums and Exhibitions where samples are exhibited and their economic, Industrial and Commercial value is demonstrated.

6 A press communique states that it is proposed to hold a British Empire Exhibition in London in the summer of 1921 with the object of promoting the extension of Imperial Trade by bringing before buyers from all parts of the world exhibits of the Industries, Inventions, raw materials, and the products of

the Empire and the scheme has been approved by the Board of Trade.

7 In India, the Commercial Museum at Calcutta is a Government organisation and forms part of the Commercial Intelligence Department, while the Bombay Commercial Museum is conducted as a private enterprise by a few individuals seeking help, sympathy and co-operation but without receiving pecuniary contributions or grants from outside. It has been organised on a self supporting basis on practical business lines to meet the needs of the small and big merchants alike. It derives its income from the fees charged to exhibitors, visitors other than merchants and manufacturers, rents of furniture and advertising space and commission on sales effected etc. In Madras, the *Commercial Museum* is intended to be organised on the self supporting basis of the Bombay Commercial Museum by a private enterprise and it is hoped that the requisite support, co-operation and sympathy both from the interested public and the Mercantile Community will soon be forthcoming. The objects of the Madras *Commercial Museum* can be attained by —

(1) The exhibition of samples of indigenous and foreign products, raw materials, semi-manufactured and manufactured articles, machinery, tools, models, designs and specimens of arts.

(2) The exhibition of samples of goods imported into the Indian market from foreign countries with which Indian manufacturers and Industrialists have to compete and in which Indian merchants are interested in importing same, thus serving a double purpose of enabling Indian Capitalists to know the demand that exists for manufacture and export of same, and of enabling Indian merchants to understand their suitability for the Indian market and to import same, (3) To encourage the cottage workers and smaller

Industrialists to market in such things as bangles, buttons, combs, cutlery, glassware, matches, soaps, candles, pencils, pottery, matting, baskets, lace, embroidery, cloths, &c.

(4) The demonstration of manufacturing processes whenever practicable with the aid of experts and exhibitors.

(5) Effecting sales of the articles exhibited on terms and conditions mutually agreed upon with the Exhibitors.

(6) Maintaining an Enquiry Department to supply information to exhibitors, merchants and others.

(7) Publication of catalogues, annual reports and guides.

These functions can be duly performed, with great advantage and economy in the best interests of the country by the establishment of the Museum by a private enterprise on the lines of the Bombay Museum. The monthly Journal 'Commerce and Industries' started in July last has been doing very

useful work and has been much appreciated by important public men interested in trade and industry throughout India. The popularity and usefulness of the Museum can be widened by making this Magazine an organ of the Museum. The success in the organisation and maintenance of this Museum which involves the main feature of imparting education, information, and co-operation to the people, both industrial and commercial, leading to the general economic development of the country as a whole, depends to a considerable extent on the support, co-operation and sympathy with which this scheme is received by the interested and patriotic public. It is earnestly hoped that many large-minded and generous patriots will come forward with their support and co-operation for the speedy fulfilment of the objects of the Museum. The initial capital outlay necessary for the purpose of raising a suitable building in a prominent locality in Madras (say Mount Road) is estimated at 2 lakhs of Rupees.

A ROYAL PROCLAMATION.

GEORGE V, by the Grace of God of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India, to My Viceroy and Governor General, to the Princes of Indian States and to all My subjects in India of whatsoever race or creed Greeting.

1 Another epoch has been reached to-day in the annals of India. I have given My Royal assent to an Act which will take its place among the great historic measures passed by the Parliament of this Realm for the better government of India and for the greater contentment of her people. The Acts of 1773 and 1784 were designed to establish a regular system of administration and justice under the Honourable East India Company. The Act of 1833 opened the door for Indians to public office and employment. The Act of 1858 transferred the Administration from the Company to the Crown and laid the foundation of public life which exists in India to-day. The Act of 1861 sowed the seed of re-

presentative institutions and the seed was quickened into life by the Act of 1909. The Act which has now become law entrusts the elected representatives of the people with a definite share in the government and points the way to full responsible Government hereafter. If, as I confidently hope, the policy which this Act inaugurates should achieve its purpose the results will be momentous in the story of human progress, and it is timely and fitting I should invite you to-day to consider the past and to join Me in My hopes of the future.

2 Ever since the welfare of India was confided to us it has been held as a sacred trust by our Royal House and Line. In 1858 Queen Victoria, of revered memory, solemnly declared herself bound to her Indian subjects by the same obligations of duty as to all her other subjects and the equal and impartial protection of the law. In His message to the Indian people in 1903 My dear father, King Edward VII, announced his determination to maintain unimpaired the same principles of humane and equitable administration. Again in His

Proclamation of 1908 He renewed the assurances which had been given fifty years before and surveyed the progress which they had inspired On My accession to the Throne in 1910 I sent a message to the Princes and Peoples of India acknowledging their loyalty and homage and promising that the prosperity and happiness of India should always be to Me of the highest interest and concern In the following year I visited India with the Queen Empress and testified My sympathy for her people and My desire for their well being

3 While these are the sentiments of affection and devotion by which I and My Predecessors have been animated, the Parliament and the People of this Realm and My Officers in India have been equally zealous for the moral and material advancement of India We have endeavoured to give to her people the many blessings which Providence has bestowed upon ourselves But there is one gift which yet remains and without which the progress of a country cannot be consummated the right of her people to direct her affairs and safeguard her interests The defence of India against Foreign aggression is a duty of common imperial interest and pride The control of her domestic concerns is a burden which India may legitimately aspire to take upon her own shoulders The burden is too heavy to be borne in full until time and experience have brought the necessary strength, but opportunity will now be given for experience to grow and for responsibility to increase with the capacity for its fulfilment

4 I have watched with understanding and sympathy the growing faith of My Indian people for representative institutions Starting from small beginnings this ambition has steadily strengthened its hold upon the intelligence of the country It has pursued its course along constitutional channels with sincerity and courage It has survived the discredit which at times and in places lawless men sought to cast upon it by acts of violence committed under the guise of patriotism It has been stirred up to more vigorous life by the ideals for which the British Commonwealth fought in the Great War and it claims support in the part which India has taken in our common struggles, anxiety and victories In truth the desire after political responsibility has its source at the roots of the British connection with India It has sprung inevitably from the deeper and wider studies of human thought and history which that connection has opened to the Indian people Without it the work of the British in India would have been incomplete It was therefore, with a wise judgment that the beginnings of representative institutions were laid many years ago Their scope has been extended stage by stage until there

now lies before us a definite step on the road to responsible Government

5 With the same sympathy and with redoubled interest I shall watch the progress along this road The path will not be easy and in the march towards the goal there will be need of perseverance and of mutual forbearance between all sections and races of My people in India I am confident that these high qualities will be forthcoming I rely on the new popular assemblies to interpret wisely the wishes of those whom they represent and not to forget the interests of the masses who cannot yet be admitted to franchise I rely on the leaders of the people, the Ministers of the future, to face responsibility and endure misrepresentation, to sacrifice much for the common interest of the State, remembering that true patriotism transcends party and communal boundaries, and, while retaining the confidence of the Legislatures, to co-operate with My Officers for the common good in sinking unessential differences and in maintaining the essential standards of a just and generous Government Equally do I rely upon My Officers to respect their new colleagues and to work with them in harmony and kindness to assist the people and their representatives in an orderly advance towards free institutions, and to find in these new tasks a fresh opportunity to fulfil as in the past their highest purpose of faithful service to My people

6 It is My earnest desire at this time that so far as possible any trace of bitterness between My people and those who are responsible for My Government should be obliterated Let those who in their eagerness for political progress have broken the law in the past respect it in the future Let it become possible for those who are charged with the maintenance of peaceful and orderly government to forget the extravagances which they have had to curb A new era is opening Let it begin with a common determination among My people and My Officers to work together for a common purpose I therefore, direct My Viceroy to exercise in My name and on My behalf My Royal clemency to political offenders in the fullest measure which in his judgment is compatible with the public safety I desire him to extend it on this condition to persons who for offences against the State or under any special or emergency legislation are suffering imprisonment or restrictions upon their liberty I trust that this leniency will be justified by the future conduct of those whom it benefits and that all My subjects will so demean themselves as to render it unnecessary to enforce the laws for such offences hereafter

7 Simultaneously with the new constitutions in British India, I have gladly assented to the establishment of a Chamber of Princes. I trust that its council may be fruitful of lasting good to the Princes and the States themselves may advance the interests which are common to their territories and to British India and may be to the advantage of the Empire as a whole. I take the occasion again to assure the Princes of India of My determination ever to maintain unimpaired their privileges, rights and dignities.

8 It is My intention to send My dear son the Prince of Wales to India next winter to inaugurate on

My behalf the new Chamber of Princes and the new constitutions in British India. May He find mutual good-will and confidence prevailing among those on whom will rest the future service of the country, so that success may crown their labours and progressive enlightenment attend their administration.

And with all My people I pray to Almighty God that by His wisdom and under His guidance India may be led to greater prosperity and contentment and may grow to the fullness of political freedom.

GOD SAVE THE KING-EMPEROR

INDIAN STATES.

Coffee Industry in Mysore

MYSORE is a great coffee growing State and for nearly a hundred years the industry has been carried on. Of recent years it cannot be said that there has been any great development, in fact, in many places, large areas have been allowed to grow wild. It was the custom formerly for each estate to have a manager, but there has been a steady change in policy. It is now usual for one man to have charge of three, four or five estates. The result is that the number of planters in the district is now much smaller than it was a few years ago. This year the prices are such as to make the planters most happy, or they have reached a height never before touched in the memory of the present planters. It is true the exchange tells against them, but the margin is sufficient to cover the loss and to leave a handsome profit. Happy are those who are fortunate enough to possess large crops. The work of picking is just now beginning and for the next month or two all will be engaged in preparing the coffee to send to the coast. It is an interesting time on the estate just now, for the planter sees the results of his year's labour. From morning to night the coolies are hard at work, practically all working overtime in order to get the extra amount paid to those who exceed the standard measure. In some parts the crops have been exceedingly good, though in others the results are distinctly disappointing.

TEA AND RUBBER PROSPECTS

At the present time a number of planters are experimenting with tea and rubber, though the acreage under cultivation is not large in either case. I understand that rubber has grown very satisfactorily on one or two estates, but several planters with whom I have discussed the situation appear to think there is very little prospect of

successful cultivation of rubber for the market. It is perhaps early to pronounce an opinion, but there do seem to be lacking the characteristics of the West Coast climate where rubber is grown successfully. Tea is almost an experiment which is still in its trial stage. At least one company is now paying its way after several years of hard struggle. The quality of the produce is a sufficient justification for extending the work in that district, and there is every reason to believe that when once the estate gets well settled it will pay a handsome profit. In two or three other places planters have opened out a considerable acreage for tea cultivation and the promoters believe that conditions are generally favourable to the industry. I understand that a number of ex-officers have applied for billets in connection with these industries, and if they have the planting 'instinct' there are few occupations which can be more attractive. The work is not particularly strenuous, while there are unlimited opportunities for sport.—*Times of India*

Travancore Finance

The final accounts of the Travancore State for the year 1094 M E (1918-19) are now available, and it is seen therefrom that the revenue and receipts of the Darbar during the year amounted to Rs 181.83 lakhs and the ordinary expenditure to Rs 160.95 lakhs. The transactions of the year under review have thus resulted in a surplus of Rs 20.88 lakhs, and including the capital expenditure on the extension of the railway from Quilon to Trivandram amounting to Rs 37,000, which is not charged to revenue, in a net surplus of Rs 20.51 lakhs. It is worthy of note in this connection that although the area of Travancore is only 7,600 square miles, it takes the fourth rank among the Indian States

of India in point of revenue, and bids fair, at its present rate of progress, to march abreast of Baroda, the third of these States, whose revenue is only a trifle more than Rs 200 lakhs. His Highness the Maharaja of Travancore, and his able Dewan, Dewan Bahadur M. Krishnan Nair, deserve to be heartily congratulated on the conspicuous success which has attended their financial policy during the past quinquennium. The revenue which stood at Rs 154.75 lakhs in 1049 M. E. (1913-14), the year towards the close of which Mr. Krishnan Nair took charge of the office of Dewan, fell to Rs 149.15 lakhs in the following year, while the ordinary expenditure which stood at Rs 151.55 lakhs rose to Rs 162.22 lakhs. While there was thus a decrease of Rs 5.60 lakhs under revenue, there was an increase of Rs 10.39 lakhs under expenditure. This was mostly due to the sudden economic dislocation consequent on the war which broke out towards the very close of 1049 M. E. The Darbar immediately took stock of its finances, and found that, as against an increase of 23.2 per cent in the revenue, there was an increase of 36 per cent in the expenditure during the previous quinquennium. The unstable equilibrium called for immediate adjustment and in laying down the financial policy of the Darbar for the future, the Dewan stated in his opening address at the twelfth session of the Sri Maham. Popular Assembly:—The time has now arrived for the receipts and expenditure of the State being judiciously balanced. It would be dangerous to depart from the principle of equating the year's income and expenditure, and the safest and most effective means of achieving this end is engaging the serious attention of Government. Government rely on the hearty co-operation of all heads of department in reducing expenditure without impairing efficiency.

Effective steps were promptly taken to solve the grave problem with the result that the ordinary expenditure of the succeeding year, viz., 1915-16 fell from Rs 162.22 lakhs to Rs 145.76 lakhs, while the revenue rose from Rs 149.15 lakhs to Rs 152.80 lakhs. During the year following the revenue again rose to Rs 163.44 lakhs, showing an increase of Rs 8.69 lakhs over the prewar year of Rs 1913-14 while the expenditure also rose to Rs 153.21 lakhs. During the subsequent year, again the revenue further rose to Rs 165.90 lakhs and the ordinary expenditure to Rs 161.56 lakhs. The accounts of 1094 M. E. have shown an increase of Rs 15.33 lakhs under revenue and a decrease of Rs 61,600 under expenditure. The ordinary transactions of the Darbar have thus resulted in a surplus every year during the quinquennium in which the present Dewan has held charge of the administration except during the first year of the war. The revenue more than gained its equilibrium during the third year partly in consequence of an increase in the duty on salt from Ph. Rs. 1 to Rs. 1.4 per maund and of the imposition of an export duty on tea at the rate of 3h. Rs. 15 per 100 lbs. from March 1916 in pursuance of similar measures adopted in British India, but mainly as a result of the efficient working of the several revenue yielding departments. The increase in the revenue to the extent of 52.69 lakhs or by about 22 per cent during the last four years, nearly the whole of which was covered by the war, is remarkable especially in view of the fact that no additional imposts have been introduced during the period except those under the two items already referred to. As against this increase in the revenue the ordinary expenditure during the period has fallen by Rs 127 lakhs in spite of the all round rise in the prices of materials and wages of labour.

SHIPPING ENTERPRISE.

FOR some time past considerable discussion is being carried on in the Press regarding the improvement of Cochin harbour. With the growing influence of Cochin as a commercial centre the scheme has attracted the attention of businessmen everywhere. In this connection, the following letter from a correspondent will be read with interest.

Some Bombay capitalists propose to run a line of steamers between Bombay and Cochin for cargo and passenger traffic. It is reported that some time ago a representative of a leading Japanese shipping company in Bombay had made a reconnaissance of the place to

see whether there was any scope for a line between the two places, and that another ship-owner in Bombay is in negotiation with a new concern which has for the last year been in process of formation to establish a service. The Bombay man lately purchased four small steamers from the Ceylon Government, out of six which were used by the British Admiralty during the war. They were brought from Japan and two of them are retained by the Government. The negotiation is for the sale of these four steamers to the local concern. Failing this the Bombay ship-owners will probably run a line if the B. I. S. N. Co., did not step in the meanwhile.

TOPICS OF THE TIMES.

AGRICULTURE

Agricultural Conference at Pusa.

THE 11th meeting of the Board of Agriculture in India opened on December 1, at the Agricultural Research Institute, Pusa. Mr J. Mackenna, Agricultural Advisor to the Government of India, presided, and Dr J. J. F. Shaw, Second Imperial Mycologist, acted as Secretary. Among those present were the Hon. Sir Claude Hill, Mr G. Lindley Sherris, Lt Col G. K. Walker, Dr Harold Mann, the Hon. Mr J. P. Dyer, Mr Carpenter, Chief Scientific Officer of Indian Tea Association, Mr L. Newton Braun, Director of Agriculture, Federated Malay States, Mr L. A. Lechinsky, Director General of Commercial Intelligence and representatives of Kutch, Kapurthala, Baroda, Mysore, Travancore and Gwalior States. Members of the Sugar Committee were also present. In opening the proceedings Mr J. Mackenna welcomed the members of the Agricultural Board and the visitors, especially Mr Newton Braun, Director of Agriculture, Federated Malay States, remarking that this was the first occasion that the Indian Board of Agriculture was honoured by a visit from the Director of Agriculture of another part of the Empire and felt it would be to their mutual advantage. Mr Mackenna then proceeded with a survey of the more important events which transpired since the last meeting of the Board of Agriculture held in Poona in 1917.

One of the notable features of the last two years continued Mr Mackenna, has been the increased attention devoted to agricultural education. The subject was last discussed by the Board of Agriculture at Poona. The Board *inter alia* resolved that for the rapid development of agriculture in India a sound system of rural education based on rural needs, is essential and recommended the establishment as an experimental measure of a limited number of Agricultural Middle Schools to meet the probable demand for improved rural education. These suggestions have received serious attention in the provinces. Agricultural middle schools are being opened in Madras, Bombay, the United Provinces and Central Provinces, while in the Punjab agricultural education is encouraged in the existing vernacular and high English schools. A great impetus has been given to the cause of agricultural education by the distribution of imperial allotment for the purpose and as it is hoped there will be an annual

allotment of varying amounts, the outlook is bright. With regard to higher agricultural education the Lyallpur College has been affiliated to the Panjab University, Burma is having its own College and Bengal is considering the question of having one for that Presidency. The subject of high agricultural education has also received consideration at the hands of the Calcutta University Commission, and it is gratifying to note that they have advocated the introduction of agricultural courses in the University. Briefly they recommend that (1) there should be elementary agricultural course provided in some of intermediate Colleges suitable for Zamin-dars, officers of co-operative societies, district boards, teachers in rural schools etc. and (2) that facilities should be afforded in the University for training of a more scientific and elaborate nature of a limited number of students.

SIR CLAUDE HILL'S SPEECH

Sir Claude Hill addressed the members of the Agricultural Board in a lengthy but happy speech. We give below some important extracts:-

"This is to my very great regret the last time I have the honour and I may add the pleasure of addressing you as the member in charge of the revenue and Agricultural Department, and you will perhaps bear with me patiently, if in the course of my remarks, I become somewhat personal. First of all, however, I will deal with some of those matters which emerge from your agenda and from the deliberations which have taken place at this Board meeting. Sir Claude Hill then referred briefly to questions of establishing provincial boards of agriculture, of improving official forecasts of crops and of measures for the prevention of famine. He then proceeded.

The problem of cotton and the development of its cultivation in India, had to be grappled with and the Committee over which Mr McKenna presided so ably and which reported last year, has presented us with the most valuable document. If its importance is to be gauged, by the appreciation with which it has been received by the Empire Cotton Growing Association and the public then I think Mr McKenna and his colleagues are to be warmly congratulated. We are taking up the recommendations which they formulated as rapidly as possible and I hope that in the matter of

establishing cotton markets, publishing prices and licensing gins and presses as well as in the matter of encouraging the development of longer staple cotton, action may be taken in conformity with the report before I bid farewell to India. Thirdly, it seemed to Mr. McKenna and me that the time has come to investigate thoroughly the position of sugar cultivation, manufacture and marketing in India, and, as you are aware, Mr. McKenna's broad shoulders have undertaken this herculean labour also in conjunction with the distinguished colleagues, whom it has been a real pleasure to us to meet here. I feel confident that difficult though this task is more difficult even than the cotton problem we shall solve, as the result of the Committee's labours information and advice of the greatest possible value to India will be put at our disposal and I for one look with confidence as one result to the early investment of Indian capital in developing the sugar industry. But I hope, I am not hypochondriac myself when I expect to you my colleague that though, as I have said, we have been debarred owing to the war from doing much of the work which time seemed to indicate as necessary yet partly as I believe through the more attractive manner in which we are now establishing our journals and other publications as well as owing to other reasons there is a very real development of indigenous public interest in the great industry which it is our duty to foster. Indications of this growing interest are shown on all hands and Mr. Mint has told me that it manifested itself clearly in various ways during the past session of the Legislative Council at Simla.

AGRICULTURAL DEVELOPMENT

One thing certain is that the system under which agriculture has been administered, controlled and stimulated will be radically altered. Agriculture will not only be a provincial subject, but it will be administered by a Minister.

We may hope not only that State education for agriculturists has taken a start but that most of the major provinces in India will shortly be furnished with a well equipped college for higher education and for research in agriculture. Thus we have endeavoured to initiate a machinery for furthering developments which will now be entrusted to the Provincial Administrations through the hands of responsible Ministers.

THE POLICY OF THE FUTURE

As you are aware, speaking generally, our policy for the future will be to Indianise the Imperial Agricultural Service as rapidly as this can be done, having due regard to the maintenance of that high

standard of efficiency which all of you by your example, and influence have set. It will take a long time but it would have taken much longer if we had not paved the way for securing the highest possible standard of agricultural education in some of the provincial colleges to be supplemented at this institution. We have at the same time recognised that we shall for years to come require the best men procurable wherever recruited and in far larger numbers than in the past with the high qualifications possessed by yourselves.

TOWARDS THE GOAL

We find ourselves at a stage of advance in which it is possible to utilise the fruits of our humdrum labours by associating with ourselves in a greatly increased degree our fellow citizens whom we have been educating up to the task. To some of us it may appear that agitation on their part to secure this right of equal service is not only prompted by racial considerations (and may seem to us therefore, a kind of ingratitude), but is actually premature. In regard to the first point, human nature is very much the same despite what Kipling has said in *East as in West* and I would merely ask each one of you to place yourself in the position of your Indian competitor and ask yourself whether you would have done very differently in the matter of agitation from what they have done. As to the second point surely it has never been a British characteristic to decline to incur some risk in the process of advance especially when this depends upon preparation by educative means. My hope, and indeed my firm belief is that the racial hostility which has inevitably made its appearance at all events in the struggle of Indian opinion to assert its right to equal opportunity for service on behalf of India is largely the result of present circumstances and will disappear when equal opportunity is given. I cherish the hope and I honestly believe that it is not a delusion, if and when we arrive at the stage of equal opportunity which is aimed at present, we shall find that racial antagonism will largely disappear and that we and our successors will be eagerly called upon by the Indians and Indian administrators to assist in India's development and advance. In other words I believe that if we have faithfully discharged our trust we shall discover that far from being unwelcome and far from our assistance and co-operation being regarded with jealousy which would appear to be the case now, Englishmen will be invited in increasing rather than in diminishing numbers to co-operate in the furtherance of the prosperity and growth of this great Empire."

The Board of Agriculture in its further sessions discussed, among others, the question of propaganda by writing story books and issuing bulletins the empowering of village panchayats to raise local rates & to initiate land acquisition proceedings for the development of agriculture, the question of conserving natural manures such as oil-cakes bones and fish, the better utilization of rainfall, the improvement of fodder supply, the publication of correct statistical information with regard to food-crops and the prevention of strains of crops going out of the cultivation in famine years.

INDUSTRIES

Industrial Development

DR Gilbert Slater Professor of Indian Economics, in the course of an interesting and instructive lecture on the Industrial Development of South India has made several very useful suggestions from which we give below a few extracts -

FACTORS OF PRODUCTION

Text books on Economics are apt to tell you that the factors of production are Land Labour and Capital. I notice that people are apt to take hold of this statement and reproduce it with the air of uttering a valuable truth. But without a good deal of explanation it does not help. It rather misleads than guides those whose desire it is to develop new agencies of production. Let me beg of you to use your own intelligence instead of going to text books and to consider what is necessary for success in production.

Let us suppose that a group of Madras men resolve on entering upon the tanning and boot and shoe making industries in combination. They have then two out of the necessary factors of production (1) access to the necessary raw materials, (2) access to a sufficiently large market. What else do they require? Four more factors, three of which are immaterial, or I may say spiritual. They must have in the first place the enterprise to risk their capital resources and the determination to go through with the undertaking to the end; they must have in the second place the intelligence to plan wisely, to choose the right site for their factory to have it well designed to enlist the right manager sensible enough to discard the Indian delusion that it is profitable to underpay employees; they must have in the third place sufficient honour and business morality to abstain from attempting to cheat one another or the people with whom they enter into business relations. And they must also have sufficient cash and credit to be able to buy land, erect buildings, equip them with plant and machinery and employ labourers.

Once the business is well started success depends on good management. Good management has two aspects, external and internal. I have noted that the Madras University graduate in History and Economics has grasped the idea of good management in its external aspect. He understands the necessity of efficiency in the purchase of raw material and in the sale of the product. But, so far as I can discover, the idea of efficient internal management has never been the object of study

among educated Indians and I have found it very hard to give them any conception of what it entails.

THE CHIEF OBSTACLE

It is not the inefficiency of the ordinary workman which is in my opinion the chief obstacle to Indian industrial progress, but the inefficiency of the employing class. And if this is the chief obstacle it can be removed. India is not a country doomed to poverty by lack of natural resources. It is rather a country doomed to poverty because it has not yet taken the trouble to acquire the mental and moral equipment necessary to escape from poverty. Both public and private effort are necessary in order that India may acquire this equipment. Now is the time to concentrate energy upon this task.

Let me give you an example to illustrate the principle on which I think we ought to act. I have already referred to the old bad habit of exporting at once raw skins and hides and tanning materials instead of tanning the leather in India. You are doubtless aware of the fact that this was interfered with this crude method of dealing with these products, and that during the war the tanning industry developed enormously, the exports of raw skins and hides fell to half the pre-war figure and that of leather doubled. What is more important the quality was excellent, and a new and much higher reputation for Indian leather was won. But this was because Government inspection stopped adulteration. Directly that inspection is withheld the practice reappears of soaking the hides in Lysol or salts to increase the apparent weight while spoiling the leather. Is it not a folly and a shame that this should be permitted? If we have no consideration for the foreign purchaser of Indian leather if we have no regard for the good name of India in commerce, at least let us have some mercy on the honest tanner, who hates such methods, but is driven to adulterate like his neighbours lest by competition with them he is driven to bankruptcy. A big firm can hold out, because it can get a name and reputation for its own goods, but the small tanner's goods are mixed up with the mass of the product, and he gets a price determined by the average quality of the whole. The small tanner who adulterates more than the average makes a profit, he who adulterates less makes a loss. It is a vile and horrible system and as it has been proved during the war that inspection can be made efficient, it is the clear and manifest duty of the Government of India to maintain that inspection.

THE DUTY OF GOVERNMENT

But the duty of Government in regard to industry is not confined to the negative function of preventing wrong doing. There is also the positive duty of taking such action for the encouragement of industrial development as under the particular conditions which prevail in India cannot be expected from private individuals and voluntary associations.

British Industrial Future

Sir Auckland Geddes in a recent speech declared that there were already employed in industry over 800,000 more men and women than before the war. With men coming back from the Services it would be necessary to absorb almost another million in industry if the population was to be employed. There would be a total of probably 15½ millions instead of 13,800,000 before the war, although the war losses from industry alone numbered about a million. The additions were caused by the stoppage of emigration for five years and the fall in the value of money making it absolutely necessary for many who had lived as dependents to go out to work. Then the increased independence of women had its counterpart in making men who formerly would have supported their daughters as a duty say 'Well women claim to be equal with men let them work in the same way'. He wished to guard himself from the inference that it was impossible to employ this large number of people. It was only possible, however, by the spirit of determination shown in the past.

With increased prices for export goods and the cost of living being up they had started a vicious circle. All that affected the power of competition. At the present moment industry was resting upon an artificial basis. Coal was selling below the actual cost. So far as this price was produced from coal exported, it was not having a direct effect on our industry, but in so far as it was got from bankers it was having a direct effect in freights on raw material and on outward freights.

Nothing had been giving the Government greater anxiety than the fuel position. They were on the extraordinarily difficult position that the pushing forward of their industry meant pushing into a noose and the more they pushed the tighter that noose would draw unless (1) there was more coal produced and got away from the mines or (2) some other form of fuel could be got to take its place. Both these remedies were being applied. The use of oil however, transformed the basis of the whole pre-war industrial system. Special ships had to go out to get oil, the ships that went for raw material

went out partly empty, and the goods coming back had to pay double freights, while, at the other end, they had not the coal, as formerly, to pay for the raw materials. The changes in the coal industry were moving in the direction of making the rest of the country much more independent of coal than before, but at a price which the whole country had to pay. That carried with it a complete change and a permanent alteration in the wage levels.

Britain had in his opinion the greatest opportunity in her history but they must rely on the intelligent co-operation of everyone. The British Government was not built for taking over the whole of industry. Their sort of Government could only provide opportunities for instruction and information and be ready to help at any moment. But the industries themselves, employers and employed and the merchants who found the markets had to be the keen moulders and architects of the new structure of industry.

Hand loom Weaving Industry

Mr F Hooghware, Principal, Serampore Weaving Institution after carrying on investigations in the various districts in Bengal has submitted his report in the course of which he has made the following suggestion —

I am fully convinced that if the local industries of this Province are to be improved a separate department known as the Department of Industries should be created and that it should have as its head a Director with at least three efficient assistants to deal with the primary industries of this Province namely 1. An officer who has a good knowledge of hand and power weaving and its allied branches 2. a chemist conversant with industrial chemistry and capable of conducting researches and 3. a mechanical Engineer with a sound knowledge of mining experience. He also points out that industries cannot be promoted or artisans efficiently taught unless they are in some way under control and this can best be done by forming them into societies and Unions which work has been in this province entrusted to the Registrar of Co-operative Societies with the result that it has formed an impediment to the development of local industries for the simple reason that it has been subjected to dual control. For instance while the Registrar of Co-operative Societies has been entrusted with the task of organisation of artisans into Societies and financing of them, their industrial education has been entrusted to the Industrial department. And it often becomes a difficult matter for officers in charge of the two departments to work in harmony with each other. In the provinces where such dual

control does not exist the promotion and improvement of industries is considerably an easier matter

Indian Dye Industry

The Committee of the Indian Merchants' Club and Bureau, Bombay, have made the following suggestions to the Government of India on the subject of Indian dye industry

a My Committee beg to suggest that the Government of India should get prepared a list of dyes which the United Kingdom can supply to India

b Proper inquiries must be made regarding quantities of different dye stuffs manufactured in the United Kingdom and a license should be as a rule given

in those cases in which the particular needs of India are ascertained

c There must be fixed a certain ratio of price to determine what should be considered a fair margin of difference between the price for British and non-British manufacture. Licenses should not be refused except when such a difference between the price for a British product and non-British product falling within the ratio fixed

d An advisory Committee consisting of three Indian merchants and two European merchants should be appointed to collaborate with Collector of Customs of each port

INDUSTRIAL COMMISSION'S PROPOSALS.

THE following resolution dated Nov. 15, 1919 has been passed. The Government of India received the report of the Indian Industrial Commission on the 29th October 1918 and the Local Government were addressed on 14th December 1918 upon their views on certain questions of principle were asked for. On receipt of these the Government of India placed their opinions and the proposals before the Secretary of State in his Despatch dated the 4th June 1919. The Secretary of State replied in his Despatch dated the 25th September 1919 which has been received. The proposals have been in the end of the public since November 1919 and has formed the subject of numerous commentaries and discussions both in India and in England. The Government of India have announced to constitute Committees to deal with the proposals of the Indian Industrial Commission for the creation of a Chemical Service and of an Indian Store Department. The terms of reference and the personnel of each of these Committees will shortly be announced. With the Secretary of State's sanction the Government of India have ordered the reconstitution of the Indian Munitions Board as a Board of Industries and Munitions to perform the duties described in paragraph 6 of the Secretary of State's Despatch. The Government of India have expressed in paragraph 5 of their Despatch their high appreciation of the Indian Industrial Commission with which they are glad to find that the Secretary of State associates himself. The thanks of the Government of India are hereby conveyed to the Commission and to its President, Sir Thomas Holland, for their labours and for the comprehensive and well considered scheme set forth in their report. The Government of India are confident that the members of

this Commission will be able to feel back to their work in years to come at the attainment of a new era of co-operation between the Government and the industrial public for the economic advancement of India and that their zealous endeavour to this end will find its best reward in the result which the Government of India confidently anticipate from it.

Secretary of State's Despatch

The Secretary of State in his Despatch dated the 25th September accepts the principle as follows— I accept two fundamental principles underlying the recommendation of the Commission first that in future the Government should play an active part in the industrial development of the country, secondly, that the Government cannot undertake this work unless provided with adequate administrative equipment and furnished with reliable scientific and technical advice. Following on the acceptance of these principles I agree that suitable equipped organisation should be set up in the provincial Governments and in the Central Government. In giving effect to this policy, State assistance will take various forms such as research, the survey of natural resource, technical and scientific advice educational facilities, commercial and industrial intelligence the establishment of pioneering and demonstration factories, financial help, the purchase of Government stores in India, whether in the usual way of business or under a guarantee of purchase over a fixed period and probably also fiscal measures. The extent to which and the manner in which assistance under each of these heads can appropriately be given will, doubtless, be considered by your Excellency's Government.

RESEARCH AND INVENTION.

New Theory of Universe

IN the rooms of the Royal Society, at a joint session of the Royal and Astronomical Societies, the results obtained by British observers of the total solar eclipse of May 29, were discussed.

The greatest possible interest has been aroused in scientific circles by the hope that rival theories of a fundamental physical problem would be put to test and there was a very large attendance of astronomers and physicists. It was generally accepted that the observations were decisive in the verifying of the famous physicist, Einstein, stated by the President of the Royal Society as being the most remarkable scientific event since the discovery of the predicted existence of the planet Neptune. But there was difference of opinion as to whether science had to face merely a new and unexplained fact, or to reckon with a theory that would completely revolutionize the accepted fundamentals of physics.

SIR FRANK DYSON, the Astronomer Royal, described the work of the expeditions sent respectively to Sobral in North Brazil and the island of Principe off the West Coast of Africa. At each of these places if the weather were propitious on the day of the eclipse it would be possible to take during totality a set of photographs of the obscured sun and of a number of bright stars which happened to be in its immediate vicinity. The desired object was to ascertain whether the light from these stars, as it passed the sun, came as directly towards us as if the sun were not there, or if there was a deflection due to its presence, and if the latter proved to be the case what the amount of the deflection was. If deflection did occur the stars would appear on the photographic plates at a measurable distance from their theoretical positions. He explained in detail the apparatus that had been employed, the corrections that had to be made for various disturbing factors and the methods by which comparison between the theoretical and the observed positions had been made. He convinced the meeting that the results were definite and conclusive. Deflection did take place, and the measurements showed that the extent of the deflection was in close accord with the theoretical degree predicted by Einstein, as opposed to half that degree, the amount that would follow from the principles of Newton. It is interesting to recall that Sir Oliver Lodge, speaking at the Royal Institution last February, had also ventured on a prediction. He doubted if deflection would be observed, but was confident that if it did take place, it

would follow the law of Newton and not that of Einstein.

DR CROMMELIN and PROFESSOR EDDINGTON, two of the actual observers, followed the Astronomer-Royal, and gave interesting accounts of their work in every way confirming the general conclusions that had been enunciated.

"MOMENTOUS PRONOUNCEMENT"

So far the matter was clear but when the discussion began it was plain that the scientific interest centred more in the theoretical bearings of the results than in the results themselves. Even the President of the Royal Society in stating that they had just listened to 'one of the most momentous, if not the most momentous, pronouncements of human thought' had to confess that no one had yet succeeded in stating in clear language what the theory of Einstein really was. It was accepted, however, that Einstein, on the basis of his theory had made three predictions. The first, as to the motion of the planet Mercury had been verified. The second, as to the existence and the degree of deflection of light as it passed the sphere of influence of the sun, had now been verified. As to the third, which depended on spectroscopic observations there was still uncertainty. But he was confident that the Einstein theory must now be reckoned with and that our conceptions of the fabric of the universe must be fundamentally altered.

At this stage Sir Oliver Lodge, whose contribution to the discussion had been eagerly expected left the meeting.

Subsequent speakers joined in congratulating the observers and agreed in accepting their results. More than one, however, including Professor Newall, of Cambridge, hesitated as to the full extent of the inferences that had been drawn and suggested that the phenomena might be due to an unknown solar atmosphere further in its extent than had been supposed and with unknown properties. No speaker succeeded in giving a clear non-mathematical statement of the theoretical question.

SPACE "WARPED"

Put in the most general way it may be described as follows. The Newtonian principles assume that space is invariable, that, for instance, the three angles of a triangle always equal, and must equal, two right angles. But these principles really rest on the observation that the angles of a triangle do equal two right angles, and that a circle is really circular. But there are certain

physical facts that seem to throw doubt on the universality of these observations and suggest that space may acquire a twist or warp in certain circumstances as for instance, under the influence of gravitation a dislocation in itself slight and applying to the instruments of measurement as well as to the things measured. The Einstein doctrine is that the qualities of space hitherto believed absolute, are relative to their circumstances. He drew the inference from his theory that in certain cases actual measurement of light would show the effects of the warping in a degree that could be predicted and calculated. His predictions in two or three cases have now been verified, but the question remains open as to whether the verifications prove the theory from which the predictions were deduced.

The Fabric of the Universe

FROM EUCLID to KEPLER, from KEPLER to SIR ISAAC NEWTON we have been led to believe in the fixity of certain fundamental laws of the universe. The centre of a circle was always equidistant from all points of its circumference. The sum of the angles of every triangle was always two right angles. On such beliefs practice and philosophy were based. The conduct of daily life, the theory of light, and the conception of the ordered arrangement of sun and planets in their courses were based on it. Now, according to the PRESIDENT of the ROYAL SOCIETY, discussing yesterday afternoon the observations made on the solar eclipse last May, "one of the greatest perhaps the greatest, of achievements in the history of human thought has been made and the scientific conception of the fabric of the universe must be changed. In the last report, the theory

of the fixed certainty of space depended on observation. When angles or circles were measured, they confirmed with theory precisely in proportion to the accuracy of the tools employed. But certain extremely difficult cases arose in which theory and observation seemed to conflict, and a series of delicate experiments and elaborate calculations gradually led to a new view, to which the fullest expression was given by EINSTEIN, Professor of Physics in the German University of Prague. According to EINSTEIN, the dimensions of space are not absolute, but relative and shifting. The changes have escaped attention because when space is warped and a circle becomes, say an ellipse then measuring tools at the same time acquire the same warping. But here are certain cases where it might be possible to observe and measure the effects of the warping. Applying his theory to light, he predicted that the oval orbit of the planet Mercury, at the point nearest to the sun, would be found to be changing more rapidly than could be accounted for on the old theory. His prediction was proved correct. Next he predicted that rays of light from stars passing close to the sun on their way to us would be deflected to twice the amount that the principles of SIR ISAAC NEWTON would account for. The English expeditions to Sobral in North Brazil and to the island of Principe devoted their observations on the solar eclipse last May to testing this second prediction, and there is an unanimous agreement that they have verified it. A third prediction is yet remains in doubt. But it is confidently believed by the greatest experts that enough has been done to overthrow the certainty of ages and to require a new philosophy that will sweep away nearly all that has hitherto been accepted as the axiomatic basis of physical thought. *The Times*

TRADE.

Trade with India

THE New South Wales Government recently sent a special Commissioner to India to report on Indian trade prospects and the question of appointing a Government agent there.

This officer on his return expressed in very definite terms the opinion that it would be waste of money to set up the established type of Government trade office in India. He advocated either (1) the appointment of a private firm to act as agent for the Government, maintaining sample rooms and finding agents for New South Wales exporters, or (2) the appointment for a definite term of a first-class commercial traveller selected by the

group of manufacturers concerned and paid partly by the Government and partly by the group. The latter recommendation presupposed the possibility of the manufacturers being able to work together for the term of one year in order to test the Indian market for their goods.

It is suggested that the man selected should take over a shipment of goods with him, and tour the provinces, adopting certain necessary safeguards. The Chamber of Manufactures is considering this aspect of the report with a view to advising the Government.

India's Cotton Trade

The chief features of the import trade in 1918-19 were a large increase in the quantity of cotton twist and

yarn and a correspondingly large decrease in piece goods. It is true that the annual average value of piece goods received during the five war years was almost the same as the pre-war quinquennial average, but the quantity imported decreased by 50 per cent. Twist and yarn were imported to the extent of 38 million lb. as against the low figure of 19 million lb. in the preceding year, and 47 million lb. the pre-war normal. The average declared value per lb. rose from Rs. 2.50 up to Rs. 2.53. While the twist and yarn imported was much higher than in the two preceding years, the quantity received was small in comparison with the product of the Indian mills. The quinquennial pre-war average of the latter production was 646½ million lb. while the war average has been 666½ million lb. Much interest attaches to the record of the different counts imported and produced.

	1 lb. 100	1 lb. 100	1 lb. 100	1 lb. 100	1 lb. 100
Nov. 1 to 30	117.5	118.15	118.15	118.15	118.15
Nov. 31 to 30	119.1	119.1	119.1	119.1	119.1
Nov. 1 to 30	121.1	121.1	121.1	121.1	121.1
Abv. Nov. 30	121.1	121.1	121.1	121.1	121.1
1 lb. specified do	121.1	121.1	121.1	121.1	121.1
impl. in	121.1	121.1	121.1	121.1	121.1
W. 1 lb.	121.1	121.1	121.1	121.1	121.1
Tot. 1	117.5	118.15	118.15	118.15	118.15

From this table it will be seen that the imports of the coarsest counts, up to 20s in twist, the quantity imported being nearly as high as the pre-war average, but the production of these counts in the Indian mills decreased to 102 million lb. from 178 million lb. in the pre-war quinquennium. This production has since been considerably exceeded by the output of the Indian mills. The new war not only reflects the diminution of the old export of yarn but means that the Japanese mills that have in the last few years sprung up in China now both supply their own market of hand looms and have a large surplus for export. What they send to India covers one million lb. last year, while the hand loom weavers who are experiencing a revival of their craft as a result of the domination of mill competition. The development of supply from China is a guarantee for productive capacity there is sure to grow.

In count 21s to 30s there was an increase both in imports and production, but the war ended with imports reduced by 42 per cent and production increased by 28 per cent over the pre-war average. The imports of counts 31s to 40s were 23 per cent below the pre-war average, while the production was 11 per cent higher.

In regard to the sources of supply it is of great significance that Japan supplied 72 per cent of the total shipments—chiefly counts 16s to 20s and 31s to 50s as against 22 per cent in the preceding year, and

only 1 per cent in pre-war days. The imports from the United Kingdom decreased to one-fourth of the total shipments as compared with 77 per cent in 1917-18 and no less than nine tenths before the war.

British Trade with China

The first conference of the British Chambers of Commerce in China is an event of unprecedented importance in the annals of British trade with China. No fewer than 15 Chambers besides Hongkong were represented by delegates from so far afield as Khurbin, Mukden, Chungking, and Canton. Sir John Jordan, the British Minister, came from Peking especially to meet the delegates and at the opening and closing of the session contributed addresses which were inspired by his ripe experience of 43 years in China.

The most notable event was the formation of a central federation with headquarters at Shanghai of all the British Chambers of Commerce in China, which will meet annually and deal with a united voice for the whole British Mercantile community or subjects affecting British and Chinese interests. The importance of this move is conspicuous. Hitherto the various British organizations, existing in the chief ports of China, though doing much good work acted independently with the result that there was occasional divergence of opinions and sentiment of counsels.

Among other resolutions may be specially noted a strong recommendation that a Government could be used to establish a British educational institution for the Chinese in China and a willingness on the part of the Chinese to visit Great Britain.

As regards opium the conference adopted a resolution expressing the opinion that the British Government should be urged to give immediate effect to the International Opium Convention of The Hague of 1912, without waiting for its ratification by other countries, especially with the view to checking the export of morphine and kindred products. It is reported, Sir John Jordan believed was far less than it was popularly supposed to be, and he declared that China had no ground of complaint against Great Britain. The British Minister added that the cultivation of opium was ripe in nearly every province and quoted the saying of the enlightened Governor, Yen Hsi-shan of Shansi, that most of his revenue went to keeping out smuggled opium from Shansi.

Among resolutions of more purely local interest one pressed for dollar coinage in the place of sycee, another for adequate copyright and trade-mark protection, another called attention to the prevalence of piracy in South China, which is disorganizing trade.—*The Times*.

Commerce with Germany

Baron Beyens, who was the Belgian Minister to Germany at the time of the outbreak of war in the course of his impressions, makes the following remarks on the subject of resuming commercial relations with Germany —

Germany offers us certain manufactured goods of which we have need, at prices remarkably lower than those of similar products of foreign origin. The profits of such business are further augmented in our favour by the fall in value of the mark and by the state of the exchanges. Are we then going to refuse to buy these goods in order to get them at second hand when they are presented to us by sellers of neutral countries after they have taken the trouble to camouflage their origin from our eyes? Are we going to continue to provision ourselves by choice from our friends, the Americans, and the British paying more for the goods and helping still further to lower the value of our currency? That is the whole problem. Be it observed that the British and Americans, being eminently practical people have no scruples in matters of commerce and began from the moment the armistice was signed to flood the Rhine country and the rest of Germany with their own products. At the same time they laid violent hands on raw materials — a doubly advantageous operation. Another reason for buying what we lack from the Germans is that they are our debtors, and that they would thus procure from us without depriving us of anything the means of acquitting themselves of the debt they owe us.

An excessive pessimism in regard to the German peril seems to me baseless, but any excess of confidence in the other direction would be a serious imprudence. Let us always remain watchful and vigilant towards our enemies. For the moment our watchmen are the members of the Allied Missions which control the

execution of the Treaty. Let me express the hope that to their's will soon be added, by the resumption of official relations with the republic in embryo, the surveillance of our diplomatists and consuls. Through the eyes of their agents the Allied Government will be better able to learn what importance to attach to the events of which Germany in the process of transformation must inevitably be the theatre and what is likely to be the effect of these events upon the *moral* of the German people.

The Empire's Trade

The Trade and Industries Committee of the Royal Colonial Institute observe that one way of combating the introduction of foreign standards, is to encourage Dominion and Colonial students to enter British factories, and to get their training there as apprentices and as engineers. American manufacturers have recently inserted advertisements in Australian newspapers offering to train on very attractive terms Australian young men as engineers and industrialists. It is to combat this propaganda that the Committee has taken up energetically the work of facilitating the coming of students from all the Dominions to this country, to gain their experience and training. What has been said of mines and power stations is almost equally applicable to almost every other industry. There is nothing to prevent all the Dominions and many of the Colonies making gigantic strides in the establishment of manufacturing industries, and indeed the war has shown that it must be part of the policy of our Governments to ensure the starting and growth of essential and key industries. It is the view of the Committee that every encouragement should be given to such a policy for the reason that the Empire will become strong in its defences and its economic structure in so far as its various units become self supporting.

FINANCE.

Imperial Bank for India

A special meeting of the share holders of the Bank of Bengal will be held in February 1920 for the purpose of considering a scheme for the formation of an Imperial Bank of India by the amalgamation of the three Presidency Banks of Bengal, Bombay and Madras. Sir Norcott Warren, Secretary and Treasurer of the Bank of Bengal, after a preliminary explanation of the advantages, gives the following outline of the proposed scheme —

The total authorised capital with the Reserve Fund of the Imperial Bank of India will be Rs 15,00,00,000,

of which the authorised share capital will consist of 225,000 shares of Rs 500 each representing Rs 11,25,00,000 and the Reserve Fund Rs 3,75,00,000. At the present time the fully paid up shares of the three Presidency Banks are as follows —

Bank of Bengal, 40,000 shares of	Rs
Rs 500 each	2,00,00,000
Bank of Bombay, 20,000 shares of	
Rs 500 each	1,00,00,000
Bank of Madras, 15,000 shares of	
Rs 500 each	75,00,000
Total	3,75,00,000

It is proposed that the paid up capital of the Imperial Bank shall be Rs 5,62,50,000 and that the Reserve Fund shall be increased to Rs 3,75,00,000

To effect this —

	Share capital Rs	Reserve Rs	Total Rs
The Bank of Bengal has to contribute	3,00,00,000	2,00,00,000	5,00,00,000
The Bank of Bombay has to contribute	1,50,00,000	1,00,00,000	2,50,00,000
The Bank of Madras has to contribute	1,12,50,000	75,00,000	1,87,50,000
	Total		9,37,50,000

III NOMINATION

For this purpose 150,000 new shares of the nominal value of Rs 500 each will be issued by the Imperial Bank of India on which the sum of Rs 125 will be payable

Out of this total issue, 80,000 shares will be allotted at par to the registered shareholders of the Bank of Bengal, 40,000 shares will be allotted at par to the registered shareholders of the Bank of Bombay and 30,000 shares to the registered shareholders of the bank of Madras at the price of Rs 225 per share. The result of this will be that each shareholder in the Bank of Bengal will exchange his present holding of shares for an equivalent number of fully paid shares in the Imperial Bank and, in addition, will receive two new shares at par of the Imperial Bank for every share so exchanged on which latter new shares Rs 125 will be immediately called up and payable. Shareholders of the Bank of Bombay will make a similar exchange and receive a like allotment, and shareholders in the Bank of Madras will also exchange on the same terms and receive a like proportion of shares Rs 125 called up at the price of Rs 225 per share. All future calls on the partly paid shares of the Imperial Bank will be payable at par.

1. THE GOVERNING BODY

2. The governing body of the Imperial Bank will be a Central Board, under which will be local Boards at the three Presidency towns of Calcutta, Bombay and Madras. Such Central Board will consist of General Manager or in the first instance of two General Managers, the Controller of Currency and the President and Vice-President of each Local Board and the Secretaries and Treasurers of the Local Boards, the latter having no voting power. The general manager or general managers will be appointed by Government

on the nomination of the Central Board the term of the office being for five years. The Controller of Currency will be an ex officio member of the Board and will have power to require the Board to hold up action for orders of Government on any matter which he might consider to be of vital importance as affecting the financial policy of Government or the safety of its cash balances. The functions of the Central and Local Boards will be governed by bye laws which in the case of the present bye laws regulating the administration of the three Presidency Banks will be subject to the approval of Government. The function of the Central Board will be, as indicated above to deal with matters of general policy, and it will have general power of control over the Local Boards and also be responsible for the settlement of any disputes which may arise between the respective Local Boards and would determine the distribution of funds, fixation of the Bank rate and also be responsible for the publication of the Bank's weekly statements. The general revisions of salaries of the establishment employed under the Local Boards or increase in appointments will be subject to the sanction of the Central Board though it is intended that it should be given power to delegate means of bye laws any of such matters to the Local Boards for their control.

CENTRAL BOARD CONSTITUTION

The constitution of the Central board will be designed to secure on its adequate representation of the interests of the Local Boards and also of the shareholders and further, as it would not, in practice, be feasible for a Board so constituted to meet with sufficiency to administer the current business falling within its sphere it will be arranged that these functions should ordinarily be discharged on its behalf by a Managing Board or working Committee consisting of the general manager or general managers, the Controller of Currency and such other members of the Central Board who may be available at the place of meeting. Ordinarily meeting of the full Central board will be summoned not less frequently than once a quarter alternatively at Bombay and Calcutta additional meetings being summoned whenever necessary and any Local Board will be entitled to requisition a meeting of the full Central Board, at any time, for the purpose of considering any special matters. The Managing Board on the other hand, would meet frequently and would be armed with the full administrative powers of the Central Board, subject to any special instructions. As regards the Local Boards of Directors at Calcutta, Bombay and Madras it is proposed that they should respectively

remain as at present constituted and should continue to deal with the ordinary day to day banking business in their respective territories supervising the work of the branches constituted therein, though it may eventually be found desirable to make certain readjustments of territory between the three Boards and further, with the development of business, to constitute new Local Boards of Directors at such centres as Rangoon and Canton. The Directors of each Local Board will be elected by the shareholders whose names are borne on the Local Register.

AN OFFICE IN LONDON

3 The Imperial Bank of India will open an office in London which, while not competing with the Exchange Banks in ordinary Exchange business, would be permitted to conduct business on behalf of the Bank's constituents to rediscount bills of Exchange for the Exchange Banks and to conduct such business as the Secretary of State might give it and generally to represent Indian commercial interests in London.

4 The Imperial Bank will take steps to increase the number of its branches, and the intention in this respect is within a period of five years, to open 100 new branches or thereabouts and in this connection Government will bear the right of nominating the location of one out of every four new branches.

5 In the event of the scheme being adopted Government have intimated their willingness to abolish the Reserve Treasury and to place the whole of their funds with the Bank.

6 The Imperial Bank will retain management of the Public Debt Works but it is contemplated that a large measure of decentralisation will be introduced therein. In the new legislation which must be necessarily introduced for bringing the Imperial Bank of India into being, the opportunity will be taken of not altering fundamentally the present general character of the bank's business, to modify certain of the present restrictions which in practice have been found to be unnecessarily rigid.

On the legislation being introduced by the Government of India and adopted for the constitution of the Imperial Bank of India it may be necessary for the three Presidency Banks to convene further meetings for the passing of a Special Resolution for the winding up voluntarily of the three Presidency Banks and for the transfer of the respective undertakings to the Imperial Bank.

British Finance

We referred last month to the speech of the Chancellor of the Exchequer, Mr Chamberlain, which indica-

ted that the financial situation in England gave no cause for panic. Mr Asquith has criticised the speech as follows —

"This financial statement means, in the first place, on the part of the Chancellor of the Exchequer, perhaps the grossest financial miscalculation in the whole annals of our history. At least, I have never heard of anything approximating to it. Having made this uncrampled and almost inconceivable error only six months ago, in estimating the financial position of the present year, he proceeded to present a hypothetical Budget for the future with any confidence — a Budget I think, of some eight hundred millions upon each side of the account, which shows a small but a very substantial surplus. I speak to you as an old hand in these matters and I warn you and I warn my countrymen outside that this hypothetical Budget is not worth the paper on which it is written. Even if all the receipts which it assumes, regular or casual come in, it is hopelessly vitiated by the fact that it takes no account of what is, I believe, all important in these matters, the inevitable increase upon necessary funds of expenditure. There are forms of expenditure which we ought to curtail, which we must curtail, which are non remunerative and non productive, and upon the drastic reduction of which the whole of our financial future depends.

"There was only one way in which the Chancellor of the Exchequer could deal with the situation and that was by frankly imposing additional taxation. We could not get rid of the real incubus upon our future prosperity without taxation, and taxation must take — because we could not go on increasing the burden upon the necessities of life — one of two forms. There were only two choices — either an increased income tax, which is already very high on some form of duty upon realized or realizable wealth. He was led to see that the Government were going to have an inquiry as to whether it was possible to tax, not the war profits which had already been taxed to a large extent but war fortunes. He appealed as he had unwillingly to do a year ago, to extend the ambit of that inquiry to see whether or not it was possible, consistently with justice, equity, and sound finance, to include within its scope the question of the possibility of putting a tax upon realized wealth as a whole. No one was more aware than he was of the difficulties of such a proposal —

India's Fiscal Policy

The Joint Parliamentary Committee on Indian Reforms have made the following recommendations regarding the Fiscal Policy for India —

The Committee have given most careful consideration to the relations of the Secretary of State with the

MOTOR NOTES

The Daimler Company, Ltd. has received the following letter from Captain the Hon. Sir Charles Wentworth Fitzwilliam, K. C. V. O., Crown Iquerry to the King: "I was desired by His Majesty to express to you his appreciation of the running of the Daimler cars used by their Majesties on their journey from Balmoral to London on Oct. 3 and 4. Both cars, which have been in constant service since they were delivered by you some years ago, ran the distance of 541 miles without the least trouble of any sort. The second car, I believe, was for luggage only so their Majesties depended entirely on the reliability of one of their Daimler limousines."

Referring to a statement that "there are roughly three American cars being sold in South Africa for one British," *The British and South African Echo and Gazette* says: "Why there were only four British cars imported into the Union during the whole of last year and a paltry three dozen in 1917. British cars have not been in competition at all, but they are coming back and then we shall see what British enterprise can do to regain the former business when the market was worth over £1,100,000 per annum, and Great Britain held the lion's share."

Immediately no country is manufacturing enough to meet its own demands. On the other hand in Britain

they are not preparing even to meet their own demands, still less those of the overseas markets. But no doubt the American production will shortly be shared between the home and foreign markets even though the former be kept short for a while. There is something more than a possibility also, that the 4 per cent tax may be removed in May. The American naturally, would then take fullest opportunity of the opening thus offered. British schemes of quantity production compared with those of the United States and some Continental countries, are inadequate. Far too many of their makers aim at the restricted market for the high priced luxury cars. Even before the war there were sufficient firms of established reputation to meet the demand. As for the newcomers one is at a loss to indicate their possible markets.

The income tax statistics should indicate that there are not enough people able to pay between £1,500 and £2,000 for a car and to maintain it. There are some 50,000 with incomes of £1,000 or over, most of them being in the £5,000 class. With the increased taxation and the lower value of the sovereign the £1,000 a year man can hardly buy one of the costliest cars. He could have maintained a Rolls-Royce in 1914; today the £1,200 car corresponding to the £500-600 prewar vehicle, is his limit.

NEWS AND NOTES.

We are glad to announce that owing to the reduction in the price of paper the annual subscription for 'Commerce and Industries' will be reduced from Rs. 10 to Rs. 8 post free and the half yearly subscription to Rs. 5. This will take effect from January 1920. We propose also to increase the bulk of the Journal and make it increasingly useful and attractive in several ways. We regret the delay in the issue of the Journal but in view of the change of the printers we hope to be more prompt in future.

Mr. A. Y. G. Campbell, C. I. E., I. C. S., Director of Industries, Madras, is appointed Controller of Munitions, Madras circle.

The total value of the imports into Calcutta from foreign countries for eight months from 1st April to 30th November 1919 is Rs. 512,156,741, while that of the exports for the same period is Rs. 905,689,303.

In connection with the Industrial Courts Bill, the members of the new Permanent Court are Sir Warrander Muckenzie, President, Mr. E. H. McKend, Chairman and six members which include Mrs. Violet Murkham and Miss Cecile Matheson.

The following notification is issued. The Governor General in Council is pleased to direct as follows—(1) The nickel eight anna and four anna pieces specified in section 6 of the Indian Coinage Act shall henceforth be coined at the Mint and issued. The eight anna coin shall be circular the diameter being 26 millimeters. The rim shall not be milled. The four-anna coin shall be a coin with a waved edge with eight crests and eight hollows its greatest diameter being 25 millimeters. The rim shall be milled.

During the month of November 1919, the Calcutta and Bombay Mints coined 1,05,00,025 whole rupees.

The prohibition of the export of oil and oil seeds from India was withdrawn on 11 December.

Mr C. A. McCurdy, Parliamentary Secretary to the Ministry of Food, addressing a Conference of Labour members in London said there would be a serious shortage of essential food stuffs in 1920. Butter and cheese were almost disappearing and the supplies from Australia were certain to decrease owing to the drought. The supplies of tea had decreased though the consumption had increased and there was no prospect of the world's supplies of sugar balancing with the demands.

The Government of India have issued the following Press Communiqué:—Firms or institutions importing gold into India have hitherto been paid when it is acquired by Government at the rate in force on the date of shipment or under certain conditions, at the rate prevailing at the time the gold was purchased for shipment. Certain practical difficulties have arisen in working the latter alternative and it has now been decided to substitute the following arrangement for it. The Controller of Currency or in the case of gold delivered at Bombay the Deputy Controller of Currency will be prepared to contract on behalf of the Government of India to pay for the gold on delivery at the acquisition rate prevailing at the time when the contract is entered into. Firms or institutions wishing to take advantage of the arrangement must undertake to ship gold within 30 days of making the contract, but failure to ship within 30 days will not operate to make the Contract void or involve other penalty provided that it is shown to the satisfaction of the Controller of Currency that the delay was due to no fault of the Contractor. Gold now ordered from India but by offices in London or New York for Branches or firms in India should be contracted for with the India office who will be prepared to make similar arrangements. In case of failure to make a contract gold will be paid for on the basis of the rate in force on the date of shipment.

In the House of Commons Sir Auckland Geddes, questioned with regard to the alleged collapse of short ago and the supply of domestic coal, denied that there was a shortage and said that the trouble was due to lack of transport for which the application of eight hours' day was responsible. The Board of Trade announces that the coal output for the week ended December 6, was 4,308,424 tons, the highest since May.

The *Daily Mail* states that Doctor Arnold, Professor of Metallurgy in Sheffield University, has discovered a new steel unrivalled in hardness and with cutting powers far beyond those of all existing qualities of high speed steel.

A Press communiqué issued from Delhi says:—

The following note regarding the objects of the Rouble Notes Ordinance and the procedure to be observed in the deposit and the export under prescribed conditions of rouble notes is published for general information. The import and export of rouble notes were prohibited about two years ago with a view to check the unhealthy speculation which was then prevailing. The Government of India have now received information that rouble notes are being manufactured by hundreds of millions without any currency backing and that in spite of the prohibition of import these worthless notes have been smuggled in considerable quantities into India, where it is apprehended that they will be used for furtherance of Bolshevik propaganda. They have accordingly by the Rouble Notes Ordinance declared the possession of Rouble Notes to be illegal but, in order to protect the innocent holders of such notes they have made provision for the temporary deposit or export of existing stocks in accordance with the procedure outlined below.

The Ordinance provides that no person shall have in his possession any Rouble Note after the expiry of six weeks from the date of its commencement. During the period all holders of such notes will be required either (A) to deposit holdings in a Government Currency Office or treasury without compensation or (B) to export them to any place outside India and if the notes are not exported within the specified period they should be deposited at the Currency Office at the place where there is such an office and elsewhere at the Government treasury, and these Offices will grant a receipt for the notes. As far as possible notes should be tendered in sealed boxes or covers bearing the tenders' seal.

It is announced that a Press Communiqué issued from Delhi for the information of officers of Government that the rate of 2s 4d will be applied for conversion of leave allowances and pension earned from 16th December 19 and drawn out through the Home Treasury or in a Colony in which the Indian Government rupee is not a legal tender furlough allowances fixed in sterling but drawn in India will also be converted at 2s 4d per rupee with effect from the same date.

The Government of India Bill has passed the House of Commons and the House of Lords. In the Lords, some minor amendments were made without

affecting the Bill substantially and the House of Commons has accepted them without discussion

Mr Balfour presided and Mr Montagu and members of the India Council and prominent Anglo-Indians were present at a lecture which Sir Jagdish Chandra Bose delivered at India Office. Sir Jagdish stated that he had invented an apparatus enabling the observation of the growth of plants which was only about one six thousand of the rate of the process of a snail. He showed photographs of fungi, old trees in his institute in Calcutta which by previously anaesthetising he had successfully transplanted. The difficulty of transplantation lay in the shock of removal and in the nerve effects to which the plants were equally subject as animals. Mr Balfour referred to Sir Jagdish Bose's reputation in England and the interesting contribution he had made to Science.

It has practically been decided, says the *Bombay Chronicle* to start experimentally a Postal Air Service between Bombay and Karachi in connection with the incoming and outgoing mail steamers at Bombay.

The paper currency of the world presents problems which are many and complex but if we are to believe a story which is going the rounds of the London papers the British soldier in Palestine cannot be credited with any real desire to remedy matters. It is said that in this country when he found the possession of a scribble would buy goods combined with a negligible knowledge of English he found labels of jam tins acceptable currency and it was only when Ticker's plum and apple labels were presented at the bank that his ingenuity was discovered. It is a story which should be taken with rather more than the proverbial grain of salt but possibly even an English jam label is as valuable or valueless as the millions of Russian rouble notes which have been hoarded in India in the vain hope that a new form of Russian Government will recognise the liabilities of the Bolsheviks. — *The Times of India*

Sri Rajendra Nath Mookerjee K. C. I. D. of Messrs Martin and Company Calcutta has been made a life member of the Institute of Mechanical Engineers.

At a meeting of the members of the Indian Merchants' Chamber and Bureau Bombay the following resolution was unanimously passed: "That this meeting approves of holding a joint Industrial and Commercial Conference, towards the end of January next in Bombay."

On the motion of Mr K. S. Iyer a Reception Committee was formed with Mr Jehangir Bomanji Peti as Chairman and the Honourable Mr Purshottamdas Thakordas, the Hon. Mr Mahomedbhai Hujaribhai Lalji, Mr Homaji Cawasji Adnawalla and Mr Sitanath Poddas as Vice Chairmen.

Mr Kothari moved that Messrs. Ambrlal Sarabhai, S. R. Bomanji, Laxmidas R. Tursi, Fazulbhai Ibrahim, Kipabhai H. Vaid and F. K. Mehta be appointed Hon. Secretaries of the said joint Conference.

The motion was passed unanimously.

A joint Conference of the representatives of the various Chambers of Commerce will meet in Calcutta next month to discuss matters of commercial interest. The Chambers of Bombay, Madras, Burma, Kathiawar, Cawnpore and other commercial centres are sending representatives and it is likely that the Chambers of Commerce of Ceylon and Singapore will also be represented. It is understood that at the Conference the question of forming an Associated Chamber will be considered.

At an annual meeting of the Madras Chamber of Commerce held on Dec. 16 Sir Gordon Fraser in moving the adoption of the report said—It has not taken the Germans long to resume their efforts to trade with India, and I have seen letters written from Germany to pre-war clients written in most friendly tone with personal compliments to those with whom they came in personal touch when trading in the pre-war days. There is no doubt that great efforts will be made to secure as large a share of the Indian trades as possible and I can only reiterate the hope I expressed last year, that such precautions will be taken by Government as to ensure that Germany never again obtains the influence within the British Empire that she enjoyed at the time of the outbreak of war. In this respect we look for some definite pronouncement from Government as to the course of action to be taken.

Referring to the difficulties of the export trade he said: "First we have the present fluctuations and rapid advance in the rupee exchange and when this is to end no one can foresee. We are waiting with great interest the report of the Special Finance Commission now sitting in London, but with the price of silver over the value of the rupee and the balance of trade so heavily in favour of India, it is difficult to see how the rise in the rupee can be prevented. Referring to the development of Railways, the president said that he did not put the opening of new railway lines in the forefront, but he trusted that no expense and time would be spared in bringing our rolling and

locomotive stock on the existing railways up to date. They wanted more locomotive wagons and coaches. Referring to the heavy contribution of revenue paid by the Madras Government to the Government of India, he said, that in the case of the Imperial taxes, the Provincial Government simply acted as agents and the fact that Bombay and Calcutta collected larger amounts in income tax, import duties and other imperial taxes than Madras was no reason why Madras should be called upon to hand over to the Government of India such a large percentage of her purely provincial revenue.

Speaking on enemy aliens. Sir Fraser said, that unless some definite line of policy was laid down by Government, they would have India inundated with German traders before they quite knew where they were.

The report mentions that the ensuing Conference of Chambers of Commerce at Calcutta will be attended by H. E. The Viceroy, and the Madras Chamber of Commerce will be represented at the Conference by the Hon. Sir Gordon Fraser, Mr. I. I. Simpson and Mr. A. P. Symonds.

The Royal Assent to the Government of India Bill has been signified.

It has been announced by the Government of India that the Committee to consider the creation of an All India Chemical Service will consist of the following gentlemen—

1. Professor J. F. Thorpe, C. B. E., D. Sc., Ph. D., F. I. C., F. R. S., Professor of Organic Chemistry in the Imperial College of Science and Technology, London.

2. Dr. K. C. Caldwell, Ph. D., F. I. C., Principal, Patna College.

3. Mr. R. W. Davies, I. C. S., District and Sessions Judge, North Arcot District, Chittoor.

4. Dr. W. Harrison, Imperial Agricultural Chemist, Research Institute, Pusa.

5. Sir P. C. Ray, K. C. I. E., D. Sc., F. R. S., Palit Professor of Chemistry, University College of Science, Calcutta.

6. Dr. J. L. Simonsen, F. I. C., F. A. S. B., Forest Chemist, Forest Research Institute and College, Dehra Dun.

7. Dr. J. J. Sudborough, Ph. D., F. I. C., Professor of Organic Chemistry, Indian Institute of Science, Bangalore.

Of these, Prof. Thorpe will be the President and Dr. Simonsen the Secretary and the Committee.

The examination for the Government Diploma in Accountancy of the Sydenham College of Commerce

and Economics, Bombay, will be held in the premises of the College at Bombay from the 12th to 17th April 1920. Applications in the prescribed form should be forwarded to the Secretary, the Accountancy Diploma Board, 65 Appollo Street, Bombay, on or before the 1st January 1920 with a fee of Rs. 50 per candidate through the Principal of the College or institute to which they belonged. The examination will be held daily from 2.30 p.m. to 5.30 p.m. on the 12th, 13th and 14th April 1920 in Accountancy and Auditing in 3 papers, viz. general Accounts, special Accounts and Auditing, on the 15th, 16th and 17th April 1920 in Mercantile Law in 3 papers viz. Law of Contracts and Arbitration, Company and Insolvency Law, Negotiable Instruments, Charter Parties, Bills of Lading, and Insurance.

Tea industry has always been and is bound to be as time goes on, a very profitable concern and a safe source for the investing public. We are glad that during the recent industrial awakening in India tea industry has occupied a very prominent place. One such floated in Calcutta, is the Mohanpur Tea Co., Ltd., in advertisement of which appears elsewhere. The Managing Directors Messrs. P. Banerji & Co. are well known in Calcutta as under their management the Simna Tea & Trading Co., Ltd., which, though started in 1918, has made remarkable progress. We are glad to note that this new company under review is a purely Indian concern and has, in addition to a strong board of directors, secured some well known tea experts also. The land has been selected by Mr. Kaliprasanna Chakravarti, a tea expert of 40 years experience and the initial expense is very small owing to the favourable terms granted by the Imperial Tea Companies. As the companies are paying good dividends, some even up to 210 per cent considering the rising market for tea and the favourable conditions under which this company has been floated, we are sure that a fair cent per cent, as anticipated by the Directors can reasonably be expected and have no hesitation in recommending it to the public as a safe and profitable source for investing a part of their surplus income.

NOTE

In page 4, line 18, please read Sheth Ramji Cattranji as Sheth Ramji Chhianji, also, in page 13, read Mr. Sinha B. Sc. (III) as, Mr. Sinha B. Sc. (II) etc.

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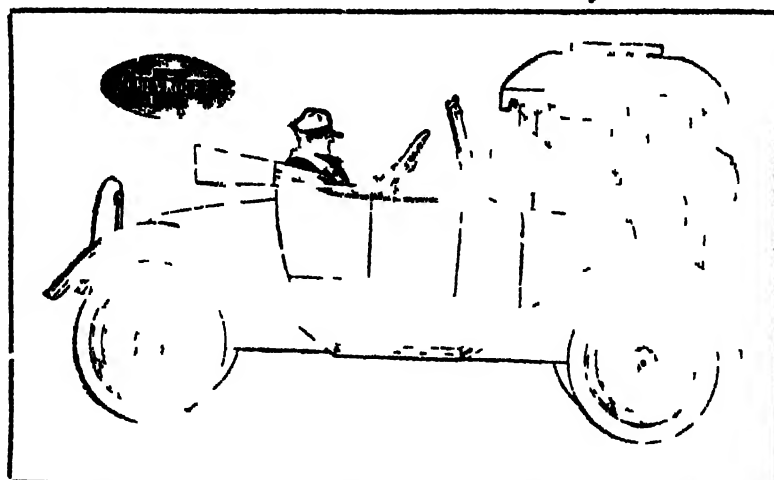
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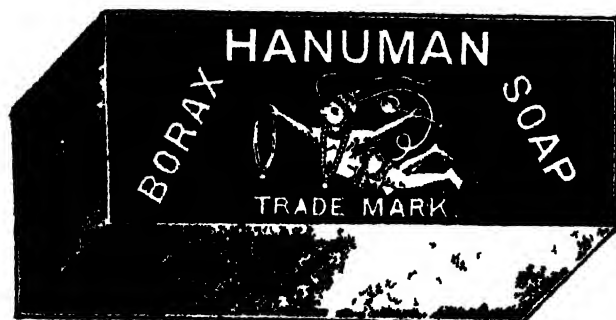
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Vol II

MADRAS, MAY, 1920

No. IV

HOW THE WORLD MOVES

TRADE PROSPECTS IN INDIA AND THE EMPIRE

THE future of our trade and industry will depend on the amicable settlement of the great labour troubles. This is our view after a study of the events of the past year. After four years of extensive war effort and the enormous sacrifices in men and money, India has at last opened her eyes and realised that her salvation depended entirely upon the speedy utilisation of her man power and the vast resources in raw material for the building up of new industries and the revival of manufactures which have decayed for want of energetic attention, co-operation, encouragement and support. Young India, with her industries in a budding state and organising capital on joint stock system as is evidenced from the new flotations throughout the country, stands face to face with her American and Japanese competitors who were least affected by the war. After the Armistice was signed, they turned their man power to trade propaganda. "The United States which have saved Europe, are now ready to re-equip Europe," was the motto of a well organised business campaign. India's resources are so great but her industrial organisations are yet to be vastly developed on the mechanical side with a view to make her self-dependent and to enable her to export her manufactures to other countries. Thus India will not only help herself in increasing her material prosperity but will also help foreign countries by supplying their wants.

Let us consider the position of Great Britain. Practically every British manufacturing industry is now supplied with orders that make five years' prosperity certain, the only notable exception being the manufacture of biscuits, preserves, and confectionery. India possessing as she does sufficient supplies of raw material for these industries will make a start at once with the fairest prospects of success. Further, the British textiles and machinery industries are over loaded with business while new industries are being started with the aid of "Key industries" which she had regained during the war as they passed out of her hands during the last generation. In two more departments she is lacking viz, sugar and shipping. But the Empire is better off than before the war and every possible attempt is being made to increase the production of sugar. In shipping, Britain expects to make good the losses of the war as the British shipping labour shows a robust sense of patriotism.

Before the war, owing to the German supremacy in the production of optical glass and dyes and in attracting industries allied to their production, the British Empire was falling behind in industries for which they are essential and also in industries allied with zinc and copper production, such as electrical

machinery manufacture which was monopolised by Germany. She had also to depend upon the United States chiefly for industries for which tools and machinery were essential. Before the war, Britain was not foremost in turning out sewing machines, typewriters, cheap motor-cars, cheap locomotives and the like while during the war as a matter of fact her position in regard to export trade was maintained remarkably well. During the current year, she is prepared to challenge the American lead by sending out largely to the foreign markets British sewing machines, typewriters, and cheap locomotives. In regard to her exports for 1918, she has shown a reduction of about 20 per cent when compared with the pre-war figures, in the value of her export trade within the Empire. British Export trade to India and the Dominions was worth £ 202,000,000, in 1913 against £ 159,000,000 in the year 1918 in spite of the fact that she was mainly engaged in the dreadful war with Germany and the maintenance of her export trade was only a side show. In view of the vigorous developments of Imperial Preference now taking place, Britain proposes to use the Empire's wool, leather, grain, meat and metal resources for Imperial production and trade and to strengthen her commercial supremacy of the world.

As far as India is concerned, there are splendid opportunities for business but only on condition that unity between employers and employed can be secured. Whatever India can produce, the Continental Markets of Europe, the great Latin Republic of South America and the re-awakened China are ready to take. The fact that there are vast accumulations of raw material in India need not be overstated. Millions of tons of timber and forest produce in India can be turned into finished products for our home market and all surplus may be profitably exported to other countries which

are in want of it. It is hoped that more and more shipping gradually will become available.

Need for Skilled Labour and Technical Schools

During the war, people greatly suffered owing to famine conditions and abnormally high prices which, after the war, have become permanent. It has been stated that they will be maintained at least for several years to come. As a necessary consequence, the demand for higher wages is perfectly legitimate and should receive the careful attention of every fair-minded person. In this materialistic age, labour has awakened to a realisation of its consciousness and strength and is determined to have a fair share of the fruits of its work. It should be admitted at the same time that it is unreasonable and suicidal for them to put forward undue demands so as to cripple industry. In certain localities and in particular industries, it has been felt that labour was not skilled and energetic and amenable to discipline so that industry necessarily suffered as a result of idleness and inefficiency, besides the clamour for higher wages. This point requires also due consideration. It is therefore not possible to arrive at a scale of wages in any particular industry or concern especially owing to fluctuations in the amount of the work and enterprise put into it.

One remedy that may be suggested is the establishment of training schools for Labour in the various departments of business in all the important centres of India affording facilities for practical training besides the regular instruction imparted in the class-room. It is the primary duty of the Government to establish such Business Training Schools in as many centres as possible and when the question of inadequacy of funds is raised, this item of expenditure in the Budget should always be pressed for preferential treatment. The allotment of Funds for this purpose should be viewed in a productive sense. The demand for

skilled and efficient labour in India is daily on the increase and the sooner steps are taken to train Labour the better for the Government and the people. When more schools of this kind are established and hundreds of trained youths are sent out for ready employment in business concerns, the Government will surely have less anxiety and greater profit. As the profit earning capacity of the industries is increased by the employment of skilled labour, the employees, besides gladly satisfying the demands of Labour for higher wages will be in a position to bear the burden for additional taxation. But, the idea of first raising heavy taxes in the name of Education including technological education and then promising to open schools will not find favour with the people. The mercantile and business community has been suffering heavily in the absence of skilled labour. The demand for efficient clerks, Book keepers, Accountants, Typists, Salesmen, Managers and Secretaries is keenly felt. It would be a terrible national calamity if this neglect were allowed to continue.

If the Government are likely to delay in taking the necessary action in the matter, it devolves upon the people, particularly the Mercantile and Business Community who feel the pinch to unite, organise, collect funds and establish institutions for the spread of technical education in India. Technical Education is yet in its infancy in our own country so that there is considerable scope for the people to take the lead in the matter and to run more institutions controlled by private enterprises side by side with the Government schools even if the latter are likely to spring in any appreciable degree. Thus the establishment of Technological Schools at an early date will considerably reduce our labour difficulties. If this remedy is not applied, labour is bound to degenerate into an automatic machine which will be handled by professional agitators who thrive on labour

troubles. Lastly, the only fair system which will benefit the employer and the employee and avert all labour troubles is co partnership. This system will work satisfactorily only when Labour is working under trained and efficient conditions, realising its duties and responsibilities.

What is India's Allotment for Education?

It has been repeatedly brought to notice on the platform and in the Press that the remedy for the greatly increasing economic distress and famine in India lies in a proper and efficient system of education which will increase the earning capacity of the workman and improve the methods of production. The British Government propose to spend £ 58 millions on education which together with all sorts of local contributions will reach £ 100 millions for a population of 45 millions souls. The Ministry of Health propose to spend over £ 27.5 millions. Thus the average expenditure per head for annum is £ 3 on health and education. Now that Education and Industries are transferred subjects, the future responsibility will rest on the Indian Ministers under the R form Act to make the people of India healthy, wealthy and educated. Great Britain spends annually only 7½ millions on police and prisons. The wisdom of the Government evidently lies in making adequate provision in the Budget allotment on Primary and Secondary Education and more especially on Industrial and Technological Education which is the crying need of the people from Cape Comorin to Himalayas. This is the surest and only course to reduce poverty and crime in India. When Great Britain spends £100 millions for 45 millions of people, what is India's Budget allotment for a population of 315 millions for the year 1920-21 on Education?

The Sri Mulam Technical School

The opening of this school with effect from the next academic year has been sanctioned by the Government of H. H. The Maharajah of Travancore. It will be attached to the P. W. Workshops, Trivandrum. There will be two classes viz., the mechanical overseers class to which the pupils holding the English school leaving certificate will be admitted and the Fitters class to which admission is open

to pupils holding the Vernacular school leaving certificate. The duration of the courses will be two years each and the fees per annum are Rs 96 and Rs 24 respectively. Both theoretical and practical instruction will be imparted. The expenditure on account of this Institution is estimated at Rs 6,915 for the first year. The question of the further development of the school will be considered after a period of two years. The Travancore State is to be congratulated on the establishment of this useful institution which we trust is only the beginning of the future Technological institute. It is hoped that the other Indian States and provinces which are yet backward in point of Technological Education will follow this excellent example set by this progressive State.

Income-tax Produces Industrial Stagnation

President Wilson in his recent message to the Congress urged the reorganisation of the taxation system, with the simplification of the income and excess profits taxes and the readjustment of tariff system in conformity with the fact that the United States is the "greatest Capitalist in the world" since American business is full-grown. "No policy of isolation will satisfy the growing needs and opportunities of America," continued the President. As regards Labour, he said "The workman demands an adequate wage, he demands the right to live, and the right to work amidst sanitary surroundings both in his home and in the workshop, and the right to provide for his children's wants in matters of health and education." He declared that Labour was not only entitled to an adequate wage but Capital also should receive an adequate return for its investment and also Government protection in every emergency.

As regards Revenue Legislation, he urges the Congress to consider whether higher rates of Income and Excess Profits Taxes are effectively productive of Revenue in peace times and "whether they may not on the contrary be destructive of business activity and productive of waste and inefficiency." He concludes by adding that "There is a point where high rates on incomes and profits discourage energy, remove incentive to new enterprise, encourage extravagance, and produce industrial

stagnation." In India, the Income tax Law has so far produced uncasiness, discontent and sometimes business dislocation among the merchants who had been often assessed on the strength of the "best information" received after enquiry by the Income-tax Inspectors. One good and indirect result of the administration of this Law, however, will be that the merchants who had hitherto neglected the business of book keeping will be compelled to maintain regular and systematic accounts on a recognised basis which is productive of immense good to the business community. On the other hand, the hardships the assesses are labouring under ought to receive due consideration while the Income Tax Law should be substantially amended so as not to cripple the indigenous industrial enterprises of the country which require the fostering care and support from the State and the Public.

Mr Balfour on Research

The attention our readers, particularly of those interested in the scientific and industrial problems of our great country, is invited to his address to the Conference of Representatives of Industrial Research Associations in England which appears elsewhere in this number. Mr Balfour who is eminently fitted to undertake the responsible position of his new appointment as the Minister of the department of scientific and Industrial Research is regarded as a "national gain." This new department has been engaged in doing valuable work in three directions firstly in stimulating the production of competent researchers, especially by making grants to promising men, secondly, in encouraging industries to use first rate men of science for the solution of their special problems, thirdly, organising inquiries into scientific and industrial problems of national importance by means of research councils. By mobilizing "the science of universities and of technical institutions" Germany had given opportunities and rewards to those who devoted themselves to the application of science and thus placed all the new scientific knowledge and trained investigators at the disposal of industry. We cordially invite the attention of competent Indians in the matter to place their views before the public in the interests of our industrial progress.

A MODEL OF INDUSTRIAL CO-OPERATION

By Mr K S Abhyankur, B A.

THE development of co operative organizations in India so far, referred mainly to providing cheap credit. Co operative credit is the first lesson in the movement, for as pointed out by Sir Horace Plunkett "so far at least as the poorer members of the community are concerned, I hold that co operative credit is by far the most valuable branch of co operation. I do so because I found in my own organising days that once the mysteries of finance could be explained to a body of men, all the other forms of co-operation became comparatively easy. Co operative credit thus prepares the ground for other forms of Co operation. Having developed co operative credit, the co operators in India are now taking in hand the organization of Industrial co operation. This form of the movement has specially developed in England, and a brief sketch of the history and activities of an Industrial co operative concern in that country will not fail to interest the general reader and may serve as a model to the active co operative worker.

The Leeds Industrial Co-operative Society, commenced its work more than seventy years ago and its history is a record of steady development. It commenced its work in 1847, under the name the Leeds District Flour Mill Society with the object of supplying people with pure unadulterated flour, at a reasonable price, at a time when it was scarce, bad and dear and at a time when wages were low, hours of labour long, work scarce, food adulterated and the introduction of the powerloom and other machinery seemed to have greatly dislocated industrial conditions. At the first meeting 433 members joined the society and in two months the membership rose to over 1,000. In 1853, the scope of work was widened, and the name was changed to the Leeds Co-operative Flour and Provision Society. It

was in 1858 that the 'Rochdale plan' of retailing flour, groceries and provisions, by the employees of the Society, at its own shop, and of sharing the profits according to purchases, was first tried. Clothing business was taken up in 1859 and then coal and meat. In the meanwhile several branches of the Society were opened in Leeds and District. The society was the first in Leeds to reduce the hours of work of its employees by closing one hour earlier in the evening and also by closing half a day each week. In 1872, when the twenty-fifth anniversary of the society was celebrated the profits reached over £10,000. During that year an Education Fund was started and a Co-operative Building Department added.

Since then the progress has been steadily kept up. New buildings have been acquired, more branches opened, coal and grain, boats and coal wagons purchased and new departments like tanners and wheelweights works, a restaurant and confectionary have been added. In 1907, was celebrated the Diamond Jubilee of the society, when a splendid exhibition of Co-operative productions was held.

To-day the activities of the society extend to almost every necessity of life. It is to be noted that nearly 28½ per cent of the supplies come from Co-operative sources including the productive works of the society itself. There is a feeling that this percentage ought to grow. There is also movement in the Society for joining the Co-operative Wholesale.

The following figures from the report of the Society for the half year ending 31st June 1919, when it was just recovering from the effects of the Great War, will give a clear idea of the extent and nature of the activities of the society. The total sales during the half year amounted to £1,810,959 an increase of

£ 504, 415 over the figure for the corresponding half of 1918. The share capital stood at £ 1, 2/9, 688 and including the loan capital, the total capital stood at 1,292, 117. The number of members at the end of the period was 76, 258, a number which must by this time have come up to nearly 80 000. Dividend on members purchases was paid at 2/4 in the £. On referring to the figures for India, it will be found that the capital, the scope of activities, and the membership of this one individual society can very well compare with the capital, the scope of activities, and the membership of all the societies put together in an Indian Province.

Some offshoots of the Society may be noted here. A journal called the *Monthly Record* was started in 1878. It is distributed gratis and discusses co-operative topics and also special topics relating to the society.

The *Women's Co-operative Guild* commenced its work in 1889. Its object is to have an organised band of women in connection with the society to help to spread a knowledge of the principles of co-operation and to draw co-operative women together, in a friendly way for mutual helpfulness in domestic, social and intellectual subjects. A *Men's Co-operative Guild* has also been formed with similar objects.

We have already referred to the starting of educational activities in connection with the

Society in 1872. These comprise classes on co-operation for children, classes for the Technical Training of junior co-operative employees and salesmen including a book keeping class, Libraries and Reading Rooms and Concerts, Lectures and Socials. Political education is also going forward in a practical way.

It will not be out of place to refer here to a new development in the English co-operative world and that is the formation of a co-operative party, Co-operators are contesting elections in the interests of this party. Just as we read of a Liberal M. P., or a Labour M. P., so we now read of a co-operative M. P. At the last Municipal elections in Leeds, two co-operative candidates took part in the contest and 'the first effort of the co-operative party in Leeds to have a direct voice in the management of their civic affairs' was remarkably successful.

Before concluding the report, from which we have quoted before, the President of the Society remarks, "co-operation is still the most effective weapon for combating trusts and combines and the need and opportunities for its application were never greater than today." We in India, lately complained of Profiteering and High Prices. co-operation will be an effective weapon to reduce these evils, the little experience we have gained in this country so far, clearly shows

MONEY IN PINEAPPLES.

By Mr R Rollo Platel

SIR F. A. Nicholson's recently published plea for the encouragement in this Presidency of a fruit growing industry on systematic lines by providing actual and intending fruit growers with facilities for acquiring a knowledge of better methods of cultivation and of marketing their produce is, of course, not the

first that has been put forward on this vast and promising subject, but it is certainly one of the most lucid and convincing that has yet been addressed to a Government and a people, who must share between them the blame for the largely and inexcusably undeveloped and unorganised condition of such

fruit industries as we can now boast of in Southern India. If our Presidency is not in a position to do a world trade in respect of native or exotic fresh fruits in consequence of the absence of refrigerator and cold storage facilities and of rapid land and sea transport, that is no reason or justification why she should suffer her many highly promising fruit industries to remain undeveloped until altered transport conditions appear. Such altered conditions will come only after we have sufficiently developed and expanded, not merely our fruit industries, but our several other promising industries in the production of perishable foods and such substances and in their proper preparation for the markets in which they would be welcomed.

The now colossal and splendidly organised fish export industry of the Moray Firth and other fishery centres of the United Kingdom, had already existed on a fairly considerable scale before the costly systems of pier, motor boats and railways were laid down to admit of the rapid distribution of fresh fish to the various inland cities and towns. The West Indian banana farming and export industry had given adequate evidence of its vast potentialities before State aid and private enterprise combined to build up the splendid land and sea transport services, which are to-day engaged in placing millions of bunches annually on the fruiterer's stalls in the United States, the United Kingdom and continental countries. Similarly, Australia had already established a fairly extensive local industry in frozen meat, fresh fruit, and even eggs and other perishable produce before the great steamship lines deemed themselves justified in providing special transport, with coal storage and such other facilities, to admit of all these products being placed on far more distant markets. There are, at the present day, not a few countries which,

notwithstanding the absence of such transport provision, are actually maintaining remunerative fruit industries, even if it is not found possible to carry on anything like an ambitious business in the export of fruit in the fresh state. For instance, the manufacture of jams, jellies, fruit pulp, preserves, syrups, etc., the crystallising and desiccation of fruit, the pickling of fruit and vegetables and allied industries are among the sources of national wealth in Europe and America, in Japan and in some of our self governing Colonies in all of which, they provide remunerative employment for large numbers of the working classes, and this too in spite of wages being both comparatively and absolutely higher than in India. The pineapple canning industry of the Straits Settlements furnishes us with a striking and valuable object lesson, which, without any extraordinary degree of industrial enterprise, we ought to be able to imitate with plenty of profit to ourselves. Shortly before the outbreak of the European war, there were sixteen pineapple canning factories working in Singapore, all but one of them being Chinese owned, and their annual output was half a million cases of the value of 2½ millions State dollars. In 1914, the imports of canned pineapple from the Straits to the United Kingdom alone were 216,348 cwt, valued at £266,323, while for 1915 the figures were 305,799 cwt and £401,732. Siam also, speaking only of Asiatic countries, used to do a fairly large trade in canned pineapple with the United Kingdom and other European countries until the war caused such a disorganisation and paralysing of ocean-borne trade and commerce.

Several varieties of the pineapple, which, as may be known, when raised with even ordinary care and trouble, is one of the most luscious and delectable of tropical fruits, are raised in various portions of the Madras

Presidency, where the shrub represents one of numerous successfully acclimatised exotics. The original home of the plant is South America, where it inhabits sandy maritime tracts in the North Eastern states. From Brazil, it was taken across Europe by the adventurous Spanish and Portuguese settlers, and being a hardy colonist, it soon established itself on the continent, the Dutch, in particular, using it with notable success, though endeavours to successfully cultivate it in Great Britain, in glass houses have never met with any great amount of success. The Portuguese, who were celebrated for the instinctive enterprise wherewith they enriched countries, in which they settled, with all sorts of exotic trees, plants and shrubs gave us the pineapple, just as they have given us the palmyra, the cashew, the mahogany, the papaya, the guava, the mangosteen and other useful members of the vegetable kingdom that are now thoroughly established in several portions of India.

At the present day, the pineapple grows more or less luxuriantly in Bengal and Assam, at the foot of the Himalayas, in Western India, in Burma, Ceylon, Siam, the Straits and in many parts of our Presidency, its range being, therefore, almost identical with that of the useful cassava or tapioca plant, which, by the way, is another vegetable settler from the distant Western hemisphere. In some Districts in this Presidency, it may even be found growing in a semi wild state, as an escape from cultivation. On the West Coast, the fruit raised is of very fine flavour, although cultivators do not, as a rule, expend any special care in the management of their pineries. The shrub thrives most luxuriantly in the soil of the Ernad or Moplah country, which is a rich brown earth, free from gravel. Several years ago, the Divisional Officer in Malabar, Mr W E Cotton, I C S, laid out a pinery in Tirur, where pineapples of a special-

ly fine quality have long been grown, but with Mr Cotton's departure, the pinery was neglected and soon disappeared. Excellent pineapples are also raised in the neighbourhood of Mahe the produce being generally plentiful. Besides ordinary varieties of the plant, the large Mauritius and Kew races, which many people consider to be of superior quality, have been very successfully grown here and there in our Presidency, chiefly, however, by Europeans, for their private use and not as a business undertaking. The green Mauritius race, for instance, was introduced very many years ago in Calicut by an European gentleman, with a passion for horticulture, and it has continued to grow there without betraying any deterioration in respect of size or flavour. The Kew pine has grown and fruited very successfully on the Travancore Hills, whose potentialities as a fruit growing region may scarcely be exaggerated. A fair amount of internal trade is done in Malabar in the sale of fresh pineapples, besides which, small quantities are raised to Bangalore, Coimbatore and other stations, but a large and regular trade in the export of the raw fruit remains to be created, while, as almost goes without saying, pineapple canning is still an unknown industry. The raw fruit keeps fresh and wholesome for several days together, even under tropical conditions, and so far as the Malabar produce is concerned, it has the advantage of being cropped in the early portion of the South West monsoon, and this should enable it to remain fresh and wholesome even longer than would be possible in the hot and sultry months. Malabar these past few years has been developing a profitable industry in the export of mangoes to numbers of stations in Western and Upper India and Bengal where there appears to be a very brisk demand, although, in point of fact, the quality of much of the fruit cannot be said to be high. Carefully raised pineapples, at this

rate, should have no difficulty in finding profitable markets in several parts of India, but the first essential would be to induce pineapple cultivators to adopt systematic and improved methods of cultivation, while it would also be very desirable to introduce some of the best varieties from the West Indies, as well as from the Straits, and experiment with them locally. There is no reason why they should not justify their importation. A good many varieties of the pineapple are recognised in cultivation and they differ from each other in size, shape, flavour and colour of the fruit, as well as in habit of growth and constitution, but the larger fruits are by no means necessarily the best flavoured or endowed with the best keeping qualities.

Apart from an export trade in the fresh fruit, pineapple tinning or canning ought to prove a very remunerative industry, especially if established in the vicinity of the pinery and within convenient distance of the railway. These conditions would not be difficult to find in those portions of the West Coast which have amply shown themselves to be excellently adapted for pineapple cultivation, another decided advantage in favour of which is the circumstance that the pineapple can be successfully grown even in soil which is too poor to produce ordinary vegetable crops, provided it has no tendency to become waterlogged and provided also that extremes of temperature would admit of being modified by sea winds. The Chinese in Singapore use the pineapple for canning in various stages of ripeness, according to the requirements of purchasers, and either whole or in slices, chunks or cubes. The contents of the tins are covered with syrups, composed of water mixed with refined cane sugar, or with the juice of the fruit mixed with an equal

quantity of water, the former being known locally in the trade as syrup grade and the latter as own juice. Much of the process of canning is done by hand labour. In the Hawaiian Islands, on the other hand, modern factories now effect the various processes of peeling, removing the eyes, coring and slicing the fruit, etc., prior to tinning, by means of a series of patented machines which have almost eliminated the necessity for touching the fruit by hand. Obviously, in the event of a pineapple canning industry being created in this Presidency, the modern machine processes would be most desirable regard being had to the commendable hygienic susceptibilities of the people. In addition to the fruit, the leaves of the pineapple possess a certain degree of economic value, furnishing, as they do, a fibre of fine quality and great strength suitable for delicate textile fabrics also for fishing line, ropes, etc. It is nearly white, very soft, silky and pliant, and, at the same time, strong, durable and susceptible of fine subdivision. For fibre production, however, the plants have to be grown closer together than when fruit only is required, in order to induce the plant to form long leaves, or they may be grown under trees in partial shade, with this end in view, fully developed leaves yielding the best fibre, but they must not be too old, as then the extraction of the fibre becomes extremely difficult, and for the same reason, they should be treated as soon as possible after being taken from the plant. The preparation of the fibre involves tedious hand labour, but, in this country, there is no reason why it should not prove very fairly profitable as a cottage industry, suitable for women and girls. Several machines have been invented for decorticating the fibre, but so far, the fibre they produce has not equalled in quality that obtained by hand methods of preparation.

INDIAN COMMERCIAL ACTIVITY.

By Pratap Chatarji, B Sc

WHATEVER may be the effect of the war in other countries, it has, however, clearly shown to us, Indians, how much helpless we are in ourselves and how much dependent on others. We have seen how we have looked upon the generosity of other countries for the things we daily use and what an amount of wealth has, in that way, been soaked in by the profiteers. That is why, with the sounding of the death knell of the war, the Renaissance of Indian Commercial Activity has come. The consciousness of our extreme helplessness and increasing poverty has struck deep into our hearts and so, with the end of the war, numerous companies have opened up. It is a good sign. But we must not rejoice very much, since this is but a preliminary, the number of companies to meet the demands of 315 millions of men is negligibly small. India has a vast field of commercial activity, with abundant and exceptional possibilities,—if only her people have a mind to be up and doing.

Among those companies, that have opened up, many may fall and many rise. But, I believe, the failures or risings are mostly due to the negligence about some vital points, which the organisers take to be minor ones. In fact, the whole structure of a concern depends upon those points.

(i) India is much behind hand in the art of advertising. There may be first class business concerns, but no one may have known about them! A concern at Madras is left, due to want of advertising unknown to other provinces,—think of that! One can see the abundance of advertisements in the western countries—in stations, in hotels, in streets, in news papers, in theatres, in trains, in calls and taxis and in a thousand other places. These advertisements pursue him wherever he goes. How will a business flourish, unless the people,—who are to patronise it,—know

of its very existence? Lacs of money are spent in the west for advertisement, and, mainly, this gives them so much success.

(ii) The next point is a most important one which should insure immediate attention. The experience we are getting from the perusal of news papers should be an eye opener.

It is the matter concerning labour. The men, who serve their employer, should be liberally provided for. We have already heard of the warning note how the tyranny of the Capitalists on the labourers has ushered in the horrible Bolshevism in Europe, and we must try our level best to bar the birth or entrance of the monster in India. We must not allow discontent spreading its webs among the labourers of our country.

(iii) Stricest honesty and punctuality should be the ideal, and are, undoubtedly, the only way to secure the good will of the public. I have often observed that a business, which had been lately going on well, suddenly was compelled to light the red lamp on account of the unexpected fall in the number of customers. Courtesy is also a potent factor. One, who has amassed some money by business, may ignore these points, being blinded by his successes but, no doubt, his concern will be soon on the way to ruin.

(iv) Some courage is also needed. We must remember the maxim, failures are but pillars of success. There may be failures in the first instance, since Indian mind has scarcely been directed towards such an end, but we must keep to the line.

A new era of the Commercial and Industrial India has dawned. To make it complete success, we must use all our intelligence, experience and strength. At the same time we must act according to the dictates of our heart and towards the furtherance of the common good of our Mother-land.

THE COMMERCIAL CLERK

By Mr B S Ramaswamier, B A L T,

MUCH of the insignificance attached to the profession rests chiefly with the individual. He rests content with what he has and what he earns and never tries to lift himself up. He confines himself to a particular groove. He is thus doing his work mechanically without the application of any higher powers. But sometimes a change of atmosphere and a change of place will do him much good. He should start his life afresh and adopt himself to new conditions and surroundings. He can thus avoid much of the dull monotony of life and do his work with sprightliness and vigour. He looks then lively and cheerful and forms an indispensable element to the commercial world. He can shake off the lethargy and discontent about him and enter into his work with renewed vigour and activity. His aim should be to rise high, occupy the highest position. Even if he fails to secure it, his aim should never be low. 'Be king in your dreams' is the motto of a millionaire. There is no harm in aiming high and keeping steadily to it.

Primarily he should have a knowledge of the three R's. With that he can hope to be in life as a junior doing the ordinary routine work in the office such as indexing, copying and so on. He should, in the meanwhile, try to acquaint himself with every branch of work and do it piecemeal. He should be a little inquisitive to learn how the senior clerk does his portion of the task. He should never go in for assistance unless he is driven to the extreme necessity. He should thus learn to know all branches of work. He is then fit to hold all the responsible posts in the office until, in the long run, he can rise to be the head or the manager. He should create a chance himself. The plea that there is no chance is groundless.

What are the qualifications of the correspondence clerk? As said above he should have a knowledge of the three R's. He should know the ordinary routine work of indexing, Pencil writing and so on. He should be fully conversant with the different kinds of address and letter writing. He should be able to do business by letters and advertising. The letters in fact should speak for themselves. He should know one or two foreign languages. In England, French and Spanish are much in vogue. But the choice depends on special conditions. In India it seems a knowledge of Tamil, Telugu, Malayalam, Chinese and Hindustani is quite essential. He who knows languages other than his own, provided he has the necessary qualifications in commercial subjects, will be valued highly. He has the chance of coming into contact with his Principal who is thus in a position to judge him by his work thus opening up a chance for his promotion. A knowledge of the important trade routes of the world is highly necessary. As occasions may arise to discuss about the comparative advantages and disadvantages of sending letters to a place which can be reached by more than one route. He should be thorough in postal rules and measures. He should have everything in his head to avoid reference to the books often. Besides he should suggest time and labour saving devices to his Principal who may not have time to go through every branch of work in detail except to effect a general supervision over all. What has been said above as regards foreign languages applies chiefly to the foreign correspondence clerk. His position is unique as being the only one who knows the various languages so that he may be sent to foreign countries to carry on effective business on behalf of his Principal. He is responsible for

all the losses or gains of his employer as he is fully entrusted with the care and management of foreign business. He has an opportunity of studying the different trade systems of foreign countries, thus adding materially to his knowledge. He will thereafter be looked upon as an authority on matters foreign. His Principal will have no mind to leave him as it will affect his pocket.

A few words about the Book-keeping clerk. He should be well up in the principles and practice of accounting. He should suggest easy method for the collection of debts from the customers. He should be up to date in keeping the ledger accounts. He should have a thorough grasp in Commercial arithmetic as regards short methods and simple calculations. He should possess accurate information about foreign currency. He should be up to the mark in Company Law, the Partnership Act and so on. It is rightly said that correctness, neatness and quickness are the three essentials in Book-keeping.

A knowledge of Shorthand and Typewriting will not be in vain for the Commercial Clerk. In fact, it forms the stepping stone to higher posts. It brings him into contact with his superior every day and that means so much influence gained for his advancement. The ability to take down notes accurately in shorthand and type them correctly raises him very much in the estimation of his employer. This is a means also of improving his knowledge of English Language and Composition, and he

should largely add to it by studying good books in literature. Type-written matter, when well arranged and properly set out, fascinates the eye and forms a recommendation by itself.

Next about the managing clerk and his attributes. He should have a ready knack of controlling his subordinates effectively without creating any friction amongst them. It is said that friction is the arch-foe of the engineer and so also it is in business. Hence the want of harmony amongst the clerks and himself may thoroughly upset the smooth working of the machinery. In small business houses he has also to do the work of advertising so as to appeal either to the emotions, tastes, humour or commonsense of the readers. Something has already been said as to the method of doing business by letters and advertisements. Effective Salesmanship by letters forms an important accompaniment to his other requisites.

To sum up, a quick head for figures, a ready hand for taking notes, an accurate knowledge of commercial geography and commercial law and a vigilant eye for supervision are highly necessary for success in life.

It will not be amiss to say a few words about the relation of the clerk to the Principal. "He should be loyal to his employer, loyal to his business and lastly loyal to himself." It is hoped that the foregoing hints may be useful for a clerk to achieve success in life.

INDUSTRIAL POLICY OF THE GOVERNMENT.

"I beg to record my opinion that in the matter of Indian industries we are bound to consider Indian interests firstly, secondly and thirdly—I mean by 'firstly' that the local raw products should be utilised, by 'secondly' that industries should be introduced, and by 'thirdly' that the profits of such industry should remain in the country." Sir Frederick Nicholson

"We do not want merely Indian Capital. We want Indian men, and not Indian men

only as labourers, but as leaders who will turn their attention to industrial enterprise and equip themselves for a great industrial regeneration in India." said H. E. Lord Chelmsford.

Sir William Clark said that "the building of industries where the Capital, Control, and Management should be in the hands of Indians" is "the special object which we all have in view."

THE SOUTHERN INDIA CHAMBER OF COMMERCE.

THE Tenth Annual General Meeting of the Southern India Chamber of Commerce was held at the Indian Chamber Buildings, Madras on March 31. The Hon. Dewan Bahadur P. Theagaraya Chetty, the President of the Chamber, delivered an address in the course of which he said as follows:—

Diverse interests are coming into play and what is wanted on the part of an association like ours is a careful and close study of every problem with a broad mental outlook and a devotion to our true national interests. Our action to be really serviceable should be based on such a study. Here in this special field of our activities, there is no room for communal considerations, no narrow party interests to serve and no claims of costs or creed. We have no party politics to divide us. We have all of us who are currying on trade and commerce, to work with one mind to pull together and advance our common cause, as best as we may. It is no easy task that lies before us. We have great obstacles in the path of our progress. We have powerful adverse interests to overcome, organised, intelligent and influential. Unless we are as well equipped as our rival organizations and can bring real business knowledge and capacity to bear on what we may attempt, we stand to lose eventually in the inevitable conflict. Let us, therefore, have a clear programme of work, an energetic propaganda and an efficient staff of workers amongst us.

Company Promotion

The Finance Member the other day, referred to company promotion in this Financial Statement, as an outstanding feature of the past year. During the eight months of April to November last, he said that 555 new Companies with an aggregate authorised capital of nearly 166½ crores have been registered in British India and Mysore. The latest figures are that for the ten months from April, 1919 to January, 1920, the number of companies registered was 721 with an aggregate authorised capital of over Rs. 224 crores, the largest flotation in January being that of the Anglo-India and Colonial Navigation Co., Bombay, with a capital of Rs. 10 crores. The question had been asked whether this spurt in company flotation is evidence of financial strength and a real for industrial expansion, or a morbid mania of the moment to be followed by crashes and crises in the share markets and

stock exchanges. Capital for a long time has been shy of investment in industrial undertakings in this country, and while we have to welcome heartily the present boom we have to be careful and cautious at the same time lest this phenomenal activity should shake credit and embarrass banking in the country. In a recent communication to us which will come up for early consideration by the Committee whom you are going to elect to-day the Government have asked for an expression of our opinion on a proposal to impose an *ad valorem* duty of one quarter per cent on the nominal capital of all Companies registered under the Indian Company Act, in addition to the Stamp and Registration Fees payable thereunder. In justification of this step it is said that the number of bona fide companies and companies with excessive nominal capital is tending to increase, that imposing figures of nominal capital tends to mislead the unwary public to believe that the strength and importance of the company are far greater than they actually are, and that it is time to protect the ignorant investor. On the other hand legitimate enterprise and the growing habit of investment have to be fostered. The question is as to how to differentiate between the sound and unsound commercial flotations. It seems to me there are other ways of checking the unwholesome growth than the one of additional taxation, but I shall leave to the new Committee to express its opinion on the proposal instead of trying to influence its judgment at this stage. At the same time, I am anxious that the tendency to gamble in shares to inflate their values at the whim of brokers and jobbers, and to stimulate reckless speculation in share transactions should find no favour and should be checked by all available means. Company promotion has become a pleasant pastime. It should not be so.

Labour Troubles

A serious menace to our industrial and commercial life at present is the epidemic of strikes and lock-outs. These have become events of every day occurrence. Labour has its own difficulties and the conditions of workmen urgently need amelioration. Provision of education, improvement of housing conditions, sanitation, hours of labour, and general welfare work all demand attention. A general policy of betterment of labour cannot possibly be initiated all at once, nor can capital adjust itself suddenly to all the demands

that may be made upon it at a stroke. A steady process of constructive work and organization will have to be undertaken. But it is no use forcing the peace, for when once capital is disorganised by blind obstruction and mad hostility, the employees will find themselves in greater misery than they are in at present. Capital and labour cannot live independent of each other and they are the true friends of both who strive to bring about their co-operation. Quite a disturbing element in our local industrial life is the exploitation of labour by outsiders for their own ends. The so-called leaders of these labour movements, often self-elected and invariably unconnected with those whom they seek to lead, cause an amount of harm to the very cause which they want to advance, by their ignorance and prejudice. Personally I have more faith in the workmen than in their present leaders. I would appeal to all workmen to have their own meetings, to discuss their own affairs with their own robust commonsense and to follow the lead of their own chosen men, who work with them and who suffer with them than be led by mere exploiters who are bent only on creating scare or sensation. They can never hope to better conditions so long as they are under bad leadership. I trust the good sense of the labourer will soon assert itself and that the present day leaders will soon find their occupation gone. No employer of labour has any right to appropriate huge profits to himself or to pay large dividends, while the labour which helps to carry on a profitable industry is under-paid if not starved. The days of selfish captains of industry are gone. But at the same time the difficulties of labour can only be met satisfactorily by a spirit of mutual good-will and a desire to arrive at decisions for mutual benefit.

High Prices

But the problem of the moment is the problem of high prices. It looks as though high prices have come to stay. There seems to be no prospect, at all events, of the level of prices coming down to anything like the old standards. It may be that the rise of prices in India has not been so great, as the rise in the United Kingdom or in some of the European countries. But there has undeniably been a great increase in all prices in India in the last few years. The upward movement was noticeable even before the war. But the war greatly increased its rapidity. The world shortage of the necessities of life and the huge inflation of European currencies reacted in due course on this country. In India, we had the huge failure of the monsoon of 1918-19, which resulted in an enormous contraction

of our food crops. We have been also suffering in this country from currency inflation. To finance war expenditure in this country currency notes have been freely issued against British Treasury Bills and our currency has been heavily watered down. Owing to the shortage of the rolling stock on the railways, even the reduced supplies of foodstuffs could not be properly distributed. The profiteer was abroad and not all the measures adopted for the conservation and distribution of supplies by means of the control system have been really beneficial to us. In some cases the remedy proved worse than the disease. It came to be asked which was the greater evil, control or profiteering. The Smith Currency Committee observe that the rise in prices in India has reached a point at which it is injurious to the country as a whole. In a special memorandum submitted by the Government of India to that Committee it is stated that the effect of high prices has of course been felt most directly by the poorer classes, but it has reacted on all sections of the community. The Government of India observe that there is no longer any room for doubt that the resultant increase in the expense of living due to the high prices of food grains as also of other necessities such as cloth, kerosene oil, and the hardships which this increase has entailed on the poorer classes and those on fixed incomes have been a very important factor in promoting unrest and discontent. The labour troubles you see around you every day are after all only the adjustment of wages to high prices. The clerical and other classes of employees are equally clamorous, and again the adjustment has to be made between their fixed incomes and higher prices. This process is a troublesome one and has to be gone through. While thus the effect of high prices on the main classes of population has been such as to cause misery to thousands of consumers, it has been argued that in view of our large export trade we stand to gain from higher prices abroad for our products in great demand in those countries. It was contended the other day that if there was a permanent rise in the value of India's products without a corresponding increase in the cost of her imports the future may be regarded as hopeful. Apart from all these theoretical considerations, the present high prices are unquestionably an evil and a danger to the country as a whole. It is impossible to predict the future course of prices. The condition of Europe at present is alarming in the extreme and until peace, order and good Government are established in the disturbed parts of the world, and production of an adequate scale to feed and comfort the world's population is ensured the desired economy

equilibrium cannot be reached. It will be a long time before this is reached and the suffering on account of high prices in the meantime will in all likelihood be an intense and prolonged one.

The Indian Fiscal Issue

You will remember that the consideration of the Indian fiscal problem was deliberately ruled out of the scope of the enquiry of the Indian Industrial Commission. The object of doing so was admittedly to give this important matter separate consideration. Besides it was impossible at the time to take up this question independent of the policy which the Government of Great Britain might determine for the United Kingdom or the self governing members of the Empire might settle for themselves. You will remember also that we have been all along urging the grant of fiscal autonomy for this country in any scheme of constitutional reforms that may be adopted for the better government of this country. During the course of the year in his Despatch on the Report of the Indian Industrial Commission in September last, the Secretary of State for India said that he was not prepared to make any pronouncement on the Indian fiscal question until the representatives of the people had an opportunity to express their views. He was confident, at the same time, that in the discussion of this question which must take place in India, the interests of the Empire as a whole would receive due consideration. Since then, we have had the report and recommendation of the Joint Select Committee on the Government of India Bill.

That practically settles the question of fiscal autonomy for us. It indicates the limitations to our autonomy. I do not quarrel with that. It therefore remains for us now to determine the right fiscal policy for ourselves. This is an issue which the reformed Indian Legislative Assembly and the Council of State may have to discuss, in the interests of India as a whole in early session of those bodies. This is an issue for which political parties in this country may sharply divide. Indeed the fiscal issue is a live issue already. The question is, what policy is right in the interests of this vast country policy of Free Trade or Protection, or Fair Trade or

Imperial Preference, or Retaliation, or whatever policy is or may hereafter become current. There are numerous considerations involved in the settlement of such a policy for us. I hope the Committee appointed the other day by the Imperial Legislative Council, to examine trade statistics and to consider and report whether or not it is advisable to apply to the Indian Customs Tariff a system of preference in favour of goods of Empire origin and has to the best methods of considering the future fiscal policy of India, will do all the spade work and clear the ground, and prepare enough materials to enable the representatives of the people to form correct judgments and draw proper conclusions, when the time comes, and determine the fiscal policy for this country. In the meantime, it looks as though the thin end of the wedge is sought to be introduced in favour of Imperial Preference. We are told that the principle of Imperial Preference has been recently adopted in the tariff of the United Kingdom and in the tariffs of several of the Dominions, and that the question has consequently become one of practical politics for India. Our tea, tobacco and coffee are all given a preference of entry into the United Kingdom. We are also now giving a preference to the United Kingdom and the other parts of the Empire in respect of our own exports duty on hides and skins. Recently, this question of Imperial Preference was considered by the Indian Industrial and Commercial Congress at Bombay. The Association of Indian Chambers of Commerce, whose representatives then met, strongly disapproved of this policy of Imperial Preference and urged that no measure of Imperial Preference should be adopted till the whole question had been examined by a Committee fully representative of the various Commercial interests of this country and until the Indian Legislature is in the position of deciding for itself the fiscal policy best suited to the interests of the country and carrying it into effect. Under these circumstances, you can realise the importance of the question and the need for its careful consideration. I would suggest that such of our members who are interested in this subject should make a special study of it from now in all its various aspects and enable this Chamber in time to express its views correctly and promptly.

At the conclusion of the address, the annual report and the annual accounts were adopted.

BUSINESS OPPORTUNITIES

At the request of numerous subscribers and admirers, "COMMERCE & INDUSTRIES" proposes to render service of a practical character by opening its columns to its readers, subscribers, advertisers and correspondents. Accordingly, a new section, "THE WORLD MARKET" is open to them in which inquiries from firms and individuals who propose to open or extend business are published. Further particulars are given elsewhere in this issue.

THE MADRAS STOCK EXCHANGE

HIS Excellency Lord Willingdon performed the opening ceremony of the Madras Stock Exchange on April, 7 in the presence of a distinguished gathering of Indian and European gentlemen. The Hon. Rao Saheb Muthiah Chettn, on behalf of the Directors, said that it is the fundamental principle of economics that no goods can attain their full value unless there be a market for the same, and the demand and supply have sufficient scope to play their role. The more scientific the price and the nicer, easier and more accurate the making of it, the better the bargain for both buyer and seller and for trade in general. This can only be secured by an organisation under one roof of as many dealers, both buyers and sellers, as can be found.

Before such a market be needed there ought to be a sufficient number of dealers who need it for their dealings, in other words, a sufficient number to invest their money in stocks, shares and securities. I would take you to the history of last century when the necessity of such a market was not absolute and the gradual development of the same. Until the end of last century the trade and commerce of the country and of the Province in especial were monopolised by private enterprise, rich people thought private enterprise more profitable, whilst the middle or lower middle class knew not the economy of small savings and had no opportunities for better investment than hoarding, or finding through money brokers at usurious rates. To-day all this is changed. The business of money-lending is getting very risky, but debt, as mortgages and bonds and securities, get money direct from Banks at reasonable rate of interest. Further, the principle of incorporation and business under limited liability is getting appreciated by the general public and people with small savings. This is why the investor with an idea to develop the trader with a business to expand, the pioneer with a country to explore and Government with a scheme to finance are eventually be taking themselves to Stock Exchanges in Bombay and Calcutta and the heavy flotations last year of both the sister Presidencies are, in a large degree, standing illustrations of the above theory. We too on this side since the last six months are getting alive to the sense of it, as may be seen from the recent promotions of limited companies in the Madras Presidency.

Manufacture and trade with limited liability, have too their pitfalls and it is to avoid them that the Stock Exchange exists. It is the Stock Exchange which creates standards and defines the difference between good and

bad investments. The brokers make a special study of the securities, the management, the organisation and other factors which play a prominent role in the success of Industry or Trade run on limited liability principle. They, so to say, specialise themselves in the art of judicious and profitable investment and protect and safeguard the interests of many people who either have no time to study their investments or others who have no brains for good investments. Gentlemen, another great service rendered by the Stock Exchange is the means it affords of readily transferring securities from hand to hand. To appreciate the importance of this fact you have but to think of the enormous difficulties and delays that attend the transfer of other forms of property that do not enjoy Exchange or market facilities. I need not state, for example, is one of the excellent forms of investments, it is transferable as well in the ordinary course. But what will be the condition of the seller if he is in a hurry and wants to cash his estate at once. There being no organised market and no competitive bidding, he is unable to gauge the possibilities of his Estate. In the urgency of the need, he may be misled by unscrupulous, or dishonest advisers and this risk increases in direct proportion to his remoteness from large market centres. The holder of securities quoted on Stock Exchange is in quite a different position. He is absolutely independent. Practically, he knows the price of his holding every hour of the day. He is exposed to no fraud tricks are not possible at all. He has positive assurance that in case of necessity, at a moment's notice he can obtain at the prevailing price the value in cash of every security which is quoted in the Stock Exchange. All the newspapers moreover publish authorised prices for his benefit and these quotations are not a one man affair, but the combined judgments of hundreds of experts, bulls and bears, bankers and brokers, speculators, jobbers and dealers bidding, and offering against such other by telegraph, telephone or post and recording the epitomised result of their bidding in the prices current on the Stock Exchange.

But the most important function of a Stock Exchange is the almost automatic method with which it draws the savings of capital and distributes it amongst profitable channels of industries and commerce. It proves to be a source of drawing the small savings of the people for profitable investments. Further it demarcates bad from good investments. The moment the management or

organization of any industry or trade begins to pay lesser dividends or profits is reflected upon the barometer of the Exchange. Hence it is that a Stock Exchange is described by an eminent English authority, as a business of businesses. It is the nerve centre of the politics and finances of Nations, because in this mere market all that makes history is focussed and finds immediate expression. It is worthily defined as the barometer of their prosperity and adversity, for a glance at the tone of this market, whose waves are more mercurial than those of any other mart, suffices to indicate their condition.

After thanking Mr C M Kothari for his valuable services in the matter, Mr Muthu Chetty requested His Excellency to open the Exchange. Lord Willingdon performed the function and in the course of his happy speech said as follows:

It will probably be said by some that I am assisting, to day in the promotion of a project which will encourage speculation and gambling amongst our people. My answer is that this is not the main purpose of any Stock Exchange but that in any country which is developing or has developed in its commercial and industrial life it is absolutely necessary that there should be established some centre some market where shares (like any other commodity in other markets) can be bought and sold, a market which by the rise and fall in share prices will be a barometer to the public of the value of any concern and owing to which capital may be less shy of appearing for investment in sound industrial concerns which are put on the market from time to time.

That is I think as I have said, the main purpose of the existence of a Stock Exchange. While I freely admit that so long as human nature is what it is it will be impossible to prevent speculation in shares or indeed in any other commodity, it is my sincere hope that under the management of a Board of Directors all of whom, I feel sure recognise the responsible duty they have undertaken to-day all of whom I am glad to know are men of influence and authority in this city, rules may be framed of such a character that the difficulties which may arise will always be dealt with in a just and fair manner. You have this great advantage in starting your enterprise Gentlemen, that you have the experience of other Stock Exchanges to guide you and will be able to avoid many pitfalls which you might otherwise have fallen into at the start.

Can there be any doubt that India stands in an extraordinarily favourable world position from a commercial and industrial point of view? The larger

number of European countries will take some time to recover from the ravages of the war. India, well as she has done her part, but for high prices, has had nothing to bear of the devastation and ruin that have overtaken other nations. We surely wish to make the most of our opportunities by encouraging and investing in sound ventures which will manufacture out raw products and will establish our position with regard to our finished products in the market of the world. I believe that India, let me add particularly the Madras Presidency is going to take full advantage of this opportunity, and it is for that reason that I gladly come here to-day to show my approval of the establishment of this Stock Exchange which is to my mind one of the essential features in any industrial advance.

Dealing with the question of labour Lord Willingdon referred to the action taken by his government during recent months in the matter of labour disputes and concluded his speech as follows:-

It is my confident belief that before long there will be a rapid development in commercial and industrial enterprise in this country, a consequent wider demand for labour which will become, I believe, increasingly organised and increasingly efficient. We are in this country in the early day of our development and my hope is that we shall profit by the mistakes which have arisen between Capital and Labour in some other highly developed countries and that we shall establish the principle of partnership rather than antagonism between these two great interests. (cheers) If Capital will realise the humanity of Labour and the fact that, if Labour takes its share in the building up of any great enterprise it should also share in its success then Capital can claim that loyal and constant co-operation from Labour which must produce harmonious working and good feeling in any industrial concern. (cheers) For seven years now I have urged in this country the cultivation of spirit of co-operation amongst us in all branches of our public life. In no branch is that spirit more necessary than between capital and labour to secure the welfare and prosperity of our Province in future years.

INDIAN TARIFFS AND BRITISH INTERESTS.

THAT repeated reference should be made to trade questions in the debates on the India Bill, read a third time in the House of Commons (last December) and brought up for second reading in the House of Lords was natural and fitting. Before the war came Great Britain's share of the great and growing seaborne trade of India was two fifths and nearly 63 per cent of Indian purchases abroad were made from this country. Generally speaking however, the House of Commons showed a due sense of proportion and a recognition of changed conditions in accepting by implication the conclusion of the Joint Select Committee that the time has come for India to have a substantial if guarded measure of fiscal freedom. Mr. R. Denniss who has represented Oldham since 1911, and Mr. G. Stewart, the member for Wirral showed some apprehension lest the contemplated limitation of the interference of the Secretary of State when the Government of India and the Legislature are in agreement on questions of fiscal policy, should have the effect of injuring inter-Imperial trade. Mr. Denniss described the manu- facturers and merchants of India as protectionists and said he anticipated that the first Budget of the new Indian Legislature would not only continue to impose duties upon English imports, but might increase them to such an extent as seriously to cripple our trade with India. In course of time India might discriminate against us in favour of Japan whose trade with her has increased so enormously during the war. He argued with much force that the great work of Britain in India would be ill requited if the Indian Legislature used its new powers to discriminate against this country and to establish unrestricted duties.

Mr. MONFACU did not answer these criticisms in any detail, but pointed out—as the Joint Select Committee did, that nothing would do us so much harm in our new task of leading India to ultimate self government as the slightest suspicion of a desire to manipulate the tariffs of India in the interests of British trade. He said he placed reliance on the sense of the solidarity of the Empire, and reminded the House that Imperial goodwill has always been developed by mutual trust. It cannot be denied however, that there is in India an extremist element, obsessed by a belief that British manufacturers and traders have injuriously exploited India in the past, who would be ready to seize any opportunity to injure British trade. They fail to realize the immense value to their country of British business enterprise, and that its results are among the main factors which render possible the present great advance towards self-government. But these considerations are not overlooked by many of the most influential and progressive of Indian

public men. It is a very long and improbable step between the anti-British spirit of some extremist sections and a vote of the new Indian Legislature in favour of any form of non Imperial preference. It is still less conceivable that the Viceroy's Executive Council would give to any proposal of the kind the concurrence which will be necessary for limiting by convention the SECRETARY OF STATES power of speaking with the authority of Parliament, the final word. Even assuming this agreement to be reached Whitehall acceptance of such a plan would be inconsistent with the intentions of Parliament. The Joint Select Committee recommend that the intervention of the SECRETARY OF STATE should be limited to safeguarding the international obligations of the Empire or any fiscal arrangements within the Empire to which His Majesty's Government is a party. Obviously under this formula he would be justified in disallowing any proposal having the effect of placing the United Kingdom or other parts of the Empire at a disadvantage in comparison with non-British countries. Though a changed convention will grow up the power of disallowance in any such case remains unquestionable. As Mr. MONFACU pointed out all measures connected with fiscal questions will be Bills, and all Bills will have to receive the sanction of the Crown.

The new convention will be effective, not in the establishment of any external discrimination unfavourable to British commercial interests but in relation to Indian manufacturing industries which are held by the Legislature and the Government to require such support. As we pointed out a fortnight ago, each case of the kind has to be judged on its merits from the standpoint both of Indian and inter-Imperial interests. The Governor General-in-Council will have a special responsibility in respect to the latter, as the connecting link on the spot between India and the Empire of which even when the full day of full responsible government is reached she is to be in the words of the preamble of the Bill an integral part. Colonel Wedgwood, while asking for more definite fiscal autonomy for India expressed the hope that she would impose no protective tariffs, since they would work to the injury of the masses of India. This consideration will in itself be a safeguard against the crude Protectionism to which Indian politicians in their day of irresponsible criticism have lapsed. It will be their bounden duty, as *The Times* pointed out the other day, to refrain from erecting tariffs detrimental to the interests of the myriads of Indian consumers. This duty will be stimulated by the prospect of a General Election every three years. (*The Times Trade Supplement*)

INDIAN INDUSTRIAL AND COMMERCIAL TRAINING.

Parents are generally perplexed as to what their young hopefuls will do after leaving school. Government and private services do not absorb the ever increasing number of our literate young people. A proportion of them is inclined to pursue an industrial or commercial career. For such of them suitable avenues do not exist. With the double purpose of providing opportunities for strong determined boys to receive training in glass, industry flour milling, and stationers' business, it is proposed to take in paid apprentices on a two to three year course, leaving them the untrammelled option on completing their training and gaining their certificates, to stay on or to work wherever they may like and of setting an example to other factory owners to afford similar chances.

Glass Industry

Eight apprentices will be admitted into my glass works at Amballa city for training, to be as follows—

(1) Two will be admitted into the office to gain practical knowledge of the sale and purchase business of the industry as a whole. An apprentice will be paid Rs. 15 a month in the first, Rs. 25 a month in the 2nd year with free quarters in the factory. He will get 15 days leave in a year on full allowance, and nothing else.

(2) Two will be admitted to receive training at work managers under an extended course for three years, starting as firemen and ending as glass makers. An apprentice of this class will get Rs. 20 Rs. 25 and Rs. 30 a month in the first, second and third years for his training respectively. They will get free quarters in the factory and 15 days leave on full allowance and nothing else.

(3) Four apprentices will be trained as blowers. They will start as blowers' helpers, and will receive Rs. 15 a month during the 1st half year and Rs. 25 a month for the remaining half. If in the 2nd year an apprentice shows to have mastered blowing in the line turned at the factory, he will be paid at the rate of Rs. 50 a month, more up to Rs. 80 a month if particularly good at his handiwork. A fully trained blower may earn from Rs. 100 to 200 a month by job work. Blower apprentices will be allowed free quarters and 15 days leave during slack season on full allowance at the rate he may be getting at the time. Blowers under training at the Glass Works will be expected to fully obey the proprietor's or his glass expert's orders and to complete their full course of training, without which no certificate will be awarded,

and in all cases the proprietor's orders with respect to factory discipline and promotion from grade to grade will be final and binding.

Flour Milling

Four apprentices will be admitted into the Upper Indian Steam Flour Mills, Amballa cantt. One will be attached to the milling department passing out finally through the laboratory attached to the Mills. The second will be attached to the power house starting as a fireman and finishing up as an engine driver with a few months' training in the workshop after which he will be given a certificate for passing his Government examination at Lahore. And the remaining two will be trained in the office in the purchase business. The first two courses will be extended to three years and other two to two years, apprentices for the first two courses will get from Rs. 15, Rs. 25 and Rs. 30 a month in the first, second and third years respectively, and those for commercial training will get Rs. 15 in the 1st year and Rs. 25 in the 2nd, after which their course will be completed and certificate awarded.

In all cases free quarters will be provided and 15 days' leave on full allowance granted.

Stationers' Shops

Two apprentices will be admitted into this line for a term of two years on a monthly allowance of Rs. 15 in the first and Rs. 20 a month in the 2nd year with free bachelor's quarters in the vicinity 15 days leave in a year, on full allowance will be given.

General conditions

For Glass industry Matriculates with chemistry as one of the subjects they may desire will be given preference when they are able to do Work Managers. An apprentice coming for training as a Miller should also know chemistry and be a Matriculate or have higher qualification. Other apprentices need only be Matriculates of the Punjab University. The first month for every apprentice will be without allowance. For further particulars please apply to —RAI SAHIB PANNA LALL.

(Proprietor, Upper India Glass Works, Amballa City)

—The Collegian

BRITISH INDUSTRIES FAIR AND EXPORT TRADE

Speaking at the British Industries Fair at the Crystal Palace, Sir Auckland Geddes, President of the Board of Trade, said that an opportunity had presented for buyers from all parts of the world to secure goods of any kind they wanted. Four travelling exhibitions of British goods are to be established for the British Dominions, the Far East, South America and the United States. He appeals to the British manufacturers and merchants to seriously consider, in their own interests, the great importance of supporting the development of such travelling exhibitions. The establishment of show rooms on the Continent of Europe and elsewhere is under the consideration of the Government.

"Such developments," said Sir Auckland, "are an index of a changing idea in regard to industry. In the past our manufacturers and our merchants have competed very severely with one another and have even through their competition one with another not helped British industry as they might. The only way we can win back to the commercial prosperity which we enjoyed before the war is through a great development of our export trade. The exchanges of the New World are at present against us and the only way in the long run that can permanently alter that position is if we should develop enormously the export trade of this country. (Hear hear.) The Home Market is certainly profitable to-day but the Overseas Market will be profitable long after the Home Market has ceased to be so very attractive. And so I would ask you to recognize in the British Industries Fair a serious effort to develop our export trade."

Sir Auckland added that the Government wanted to contribute £100,000 to the guarantee fund of the British Empire Exhibition to be held in London two years hence.

British Industrial Assurance

The Departmental Committee appointed by the Board of Trade, London to inquire into the business

carried on by Industrial Assurance Companies and Collecting Societies urge that, in the public interest, there is need for many reforms and for increased Control and recommend that legislation should be undertaken without delay.

The Industrial Assurance system lends itself to abuse in many directions says the report. Despite the vigilance of the Registrar the public is defenceless against the machination of any group of adventurers who have neither money nor reputation to lose and whose single purpose is to exploit the system for their own benefit. As regards the formation of new Companies the position is less satisfactory, but even here there are cases of gross and reckless extravagance carried on under the forms of the law in which the Board of Trade has found itself helpless to give adequate protection to the insuring public. Apart from this class of cases the Committee find many examples of reprehensible extravagance. Further and largely as the result of this waste on premiums many Companies have found themselves after a longer or shorter period involved financially beyond redemption. In a reference to the Post Office insurance system the Committee state that as now administered it can only be described as a failure. On the question of nationalization of industrial assurance, the Committee state that there are two possible courses: the transfer of the whole organization to the State or the provision of mutual benefits through the medium of the National Health Insurance system. On the question of lapses the Committee state that the matter which is the most frequent subject of complaint in regard to industrial assurance business is the excessive number of lapsed policies. The report contains proposals for the adoption of a statutory form of proposal with adequate safeguards if the form is filled up by an agent and standard forms of policies. Legislation is recommended to prevent serious abuses in the transfer of engagements of collecting societies.

RESTORATION OF MADRAS HARBOUR.

The outer end of the north cut sheltering head water of Madras Harbour was wrecked by a cyclone in November 1916 and it was subsequently decided to make a new outer bastion for it by sinking in the cut bed a caisson well, with a sunk revetment of rubble around it. Scarcity of timber compelled the strictest economy in making the numerous and varied block moulds, an important saving being effected by making the larger blocks before the smaller ones, and by careful pre-casting in the block yard. The caisson for the permanent head will consist of an outer cylinder 48 ft in diameter and 50 ft high with a strong cutting edge. Within it, but only extending down to within 15 ft of the cutting edge, there will be an inner cylinder 18 ft in diameter. The lower edge of the latter is to be splayed out, by the usual cant plate to connect with the cutting edge of the outer cylinder. Both cylinders are to be

strongly braced together to resist water pressure. There will thus be a braced annular space of 14 ft 9 in between the two cylinders. The intention is to erect the lower part of the caisson on a shipway that has been prepared for it and then having equipped it with a false bottom to launch it in an available depth of 15 ft of water. Hence it will be towed out stage by stage into deeper and deeper water concrete being deposited in the annular space at each stage, and more plate strakes added on top. Finally, when it has been sunk by concrete till it has no more than a safe free-board, it will be towed to site and sunk. Then, a light suspension bridge having been thrown across to it from the semi-permanent head, concrete will be deposited in the annular space. It is estimated that the cost of the permanent caisson-head will probably not exceed £43,000 (Sir Francis Spring *The Technical Review*.)

MR. BALFOUR ON RESEARCH

FOR INDUSTRIAL PROGRESS

Mr Balfour presided at a conference of representatives of research organizations connected with the Department of Scientific and Industrial Research, at the Institution of Civil Engineers, Great George Street, Westminster, the other day, when papers were read by Major H. J. W. Bliss, (Director of Research of the British Research Association for the Woollen and Worsted Industries) on "Research Associations and Consulting Works and the Collection and Indexing of Information," and by Mr W. Lawrence Hill, (of the Lancashire Cotton Spinners' and Doublers' Association) on "The Equipment of Research Laboratories."

Mr BALFOUR said:—Scientific investigation in connexion with industry is a subject in which if I may say so, perhaps, egotistical I have always been deeply interested, and if anybody was ill advised enough to die into the shapeless mass of innumerable speeches which I have had to deliver on various occasions he would find a good many utterances upon this theme. I evidently do think, and most of you think, the industrial progress of mankind is going to be in the near future more and more dependent upon the alliance of science and industry, and upon the co-operation of different branches of science with each other. I though we do not always act upon that principle, it has almost become a commonplace in our public discussions, though I think we sometimes are apt to forget how recent the truism which I have just enunciated is, how recent is the recognition of that truism by the general public. I do not know that there has been any book written—if so I am not acquainted with it—on the history of the relation between pure science, pure investigation, undertaken for no other object than that of increasing our knowledge of natural law, the history of the relation between that subject of human effort and industrial production. As a matter of fact I believe it to be in bulk unquestionably most recent. I hesitate to conjecture, but, without investigation, and very likely with profound error as to the facts, I think that in the first of this fruitful alliance of science and practice was in connexion with, perhaps, the discovery of Gilbert in magnetism and probably in its application of theoretical optics to the telescope and the microscope. I am not going to attempt to deal without more knowledge or preparation than I can give to this subject with the history of it. Apart from detail, and apart from the minute accuracies of history, what I think is certainly true is this, that the great industrial development in which Great Britain led the way towards the end of the

18th century—which gave us a manufacturing supremacy over the world which it is certainly impossible, and probably not wholly desirable, that we should ever regain—that industrial development was not in the main due to anything but pure science contributed to industry, and I believe that it is partly owing to that that the great industrial community of this country, whose succession to the reformers at the end of the 18th century and the beginning of the 19th century has not been interrupted have not got, as it were, into the habit of their thoughts and ideas that science is now in these days an essential element in industrial progress.

THE GERMAN DEVELOPMENT

The Germans, whose industrial development came much later, have always taken a different view. I do not think that they have shown any greater aptitude for science than our own fellow countrymen, and I am sure they have shown no greater aptitude for industry, but beginning as they did rather late in the day, with their great powers of governmental organization, with their richly developed and equipped universities, and with the view which they have always entertained of the close alliance that ought to exist between knowledge and power, they naturally and easily did what we, with more difficulty and at a later date, are beginning to do. They marshalled, they mobilized—to use a modern phrase—all the force of science in helping them to develop their great industrial efforts. We must not imitate them, but we must follow their example. They saw what, from the nature of the case, we could hardly be expected to see so soon—how close was the co-operation, how absolutely necessary it was, not merely in the competition of people with people of industry with industry, and of one community with another community, but from a broader point of view—the point of view we ought to adopt if all nations were united in one great industrial community, the point of view which really depends upon the condition of the world only upon our increasing knowledge of the power of nature that we can exert to improve the material lot of man.

It is one of the many faults which Lord Bacon has to be a great prophet of the modern movement that he laid it down that experimental knowledge was to be undertaken in order to improve the unhappy lot of the human race, and that is what ought to be one of the great objects which we have in view. I am not suggesting, of course, that mere material progress is all progress. I am not suggesting that either prosperity in

trade or the cheapening of manufactures is going to be the great regenerative of mankind. I accept the view that "man does not live by bread alone." But if you wish to improve the material lot of man and surely that is worth while, it can only be not by quarrelling over the manner in which profits are to be distributed or by any of the controversies which divide various interests and countries, it can only be by the means though they are subject we cannot avoid the thing which is really coming to make a difference in the future, to make the remainder of the 20th century different from the 19th century, and the 21st century different from the 20th is the command, for industrial power which man has over the forces of nature. It can only be attained in the first place by the cultivation of pure science, of science for itself of knowledge for its own sake. It can only be attained we have to breed and to educate men who without any thought of selfish interest are consumed by a curious desire to get at the end having been attained then to learn how to apply the knowledge which they have obtained to the great purposes of industry and commerce. Soaking broadly looking at the material progress of mankind as it is we can venture to say probably that and that almost alone is going to be the regeneration of human advance.

They had come there that there continued Mr. Balfour, because they realised broadly perhaps that they must bring knowledge to their country in the organisation of the forces of science. They realised that they had to make calls, not on science alone but on various sciences working together, and they realised that they had to employ their money in their practical endeavours, in which they were concerned and because they believed as he most relevantly observed, that unless they wished to suffer from disasters overlapping, unless they wished to lose all the advantages which inter-communication between persons similarly engaged produced, and had always produced in the history of the world it was necessary that they should meet together from time to time and interchange ideas, and make themselves acquainted each in his own industry

with what was being done by others carrying on similar efforts in similar ways and because they believed that by that means and that means alone, could they really extract all that it could be extracted from our rapidly growing knowledge of the forces of nature. He believed they would spend a most profitable afternoon by hearing the papers which were to be read. (Cheers)

REMOVAL OF TRADE SECRETS

Major Balfour in his paper gave a brief account of the causes that were leading to certain developments of the work of the British Association for the Woollen and Worsted Industries. He referred to the desirability of a consulting department. In the woollen industry there were many firms which had never made a practice in the past of employing a consultant. The reason often was that they had believed they had methods secret to themselves which they were afraid of losing for fear that the knowledge might be let out to rival. Dealing with the information bearing on that with regard to textile trade the nature of the work to be done was appalling, and overlapping of investigation and overlooking of old work were called for in order to come. With regard to the progress of the abstracts and indices, which related to the various industries were available to their Association but these things had not been prepared from their point of view so that many matters that might be of interest to the textile trade seemed to escape notice or prominence. In doing thanks to the work of the Society of Dyers and Colourists matters were better, and the Textile Institute was making effort to meet the need for the future in the systematic abstraction of relevant literature and patents outside dyeing. So far as one could judge at an early stage the system of his Association was standing, the test of experience, and the index would become rapidly and increasingly more valuable as additional workers were available.

Mr. Balfour dealing with equipment of research laboratories, said that he did not believe in starting research laboratories according to a pre-arranged plan. He advocated the completest possible elasticity of design in provision for experimental work. The plea was relevant even in pure science.—(Times)

SOCIAL AND ECONOMIC RE-STATEMENTS.

THE CREATION OF WEALTH

SO far attention has been directed chiefly to that common foundation of social welfare the public security. Not understanding the true cause of popular unrest — the getting rid finally of the tradition of servitude — taking this unrest to be a sign of danger though in fact it is a symptom of social health, our rulers instead of addressing themselves to the reform of Government on representative lines, have set out to entrench themselves against change on lines which have proved historically to be vicious, and can only plunge administration yet more deeply into the morass of extravagance. In doing so they inflame the very danger they seek to avoid.

Now if public insecurity be a clog upon production, and admittedly it is, if the effort to undermine and whittle away free government leads on the one hand to suspicion and industrial outbreaks, and on the other to hesitation and enterprise, then this failure in public trust is a bad impediment to national recovery.

There may be doubt on the point. The doubt will be dispelled by considering the sources of national prosperity.

Production, the source of national wealth, takes broadly four forms. There is first the production of food-stuffs. When the cultivator tills his fields, sows them, and reaps his harvest, he turns to account the organic energy of nature. He assists and intensifies it. He creates wealth, represented, let us say, by the difference between a bagful of good corn and a barrelful of grain.

Next there is the production of materials. Coal, iron, lime or clay have only a potential value until dug out. Their actual value is the wealth created in the process.

Thirdly, there is the working up of materials. In the process of manufacture raw cotton for example, may in value become fifty times what it was weight for weight, for it may be worked up into a mercerised fabric nearly as strong and as fine as silk. And iron may in a great variety of forms be worked up into steel products some of them five hundred times the value of the original material weight for weight. Potter's clay in like manner, becomes fine porcelain, timber furniture and fittings. The difference is created wealth.

Fourthly, there is transport. Materials and commodities have a higher value in one place than in another. The difference is realised by their removal, defraying the cost, and the profits of adventure. The difference is a creation of wealth—utility estimated in terms of money.

These are the sources of the public income. Upon the third and fourth more especially invention has had a far-reaching effect. Upon the third the influence of science and machinery has been revolutionary. But in that connection two points are often overlooked. The first is that there cannot be an increase in manufacture without a corresponding increase in the demand for materials. Number three, therefore, has reacted on number two. And there could not be this increase both in manufacture and in the production of materials without a great increase of employment. Numbers three and two in that manner react upon number one. The second point is that manufactures the production of materials and population could not be thus expanded without expansion of transport on a like scale. And all this could not have taken place without acceleration of transport. *In a word the whole working structure hangs together.* We have to remember that steam power not merely trebled the carrying capacity of the British merchant navy by saving time but that it stimulated the growth of the merchant navy. The efficiency of the merchant navy is the country's very life. The value to us of the command of the sea is not merely the freight earned by carrying for foreign nations, and the freight earned in carrying for ourselves, it is the influence of sea transport on manufacture on mining, and on cultivation. *The fortune of Great Britain is based upon the sea.*

Why did modern manufacture take a lead in this country rather than in any other? For two reasons. First, the sea gave far greater facilities for world transport, it is the only means of world transport. Secondly, whatever its shortcomings, the government of this country, based on the representative principle was at any rate better than any other in Europe. There was greater security.

Now rationally and socially it is the duty of the Government to assist the nation in its production of wealth. But what despite all the talk, do we find the executive doing? 'Controlling' and impeding sea transport, and what is more, threatening still to impede it. On the one hand they call for increased production, on the other they incur and inflict losses running into millions through delays to shipping. This is their notion of administration; the old, sad story. Does it assist the creation of wealth to vitiate representative government, and have ten tax-gatherers where there was one before? Manifestly not.

The moment the work of the world is considered it becomes too clear for dispute that creation of wealth arises from the power of mind. It is a conquest of the forces and resources of nature by human ingenuity. But when that is said the measure of the conquest is seen at once to be the measure of the ingenuity. *The boundaries of subsistence are in the mind of man.* Knowledge is both the fountain of riches and the secret of power. Not one hundredth part of the potential natural wealth of this planet has so far been tapped for the supply of human needs. Yet, in the face of these to all intents boundless riches, Governments, which should assist in the creation of wealth, have fought and squabbled and destroyed lest some should have more of the paltry realised fraction than others.

Knowledge is applied productively in method. Co-operation of man with man springs from the search for better method. Invention, summed up, is the application of better method. Enterprise is in easier and readier way of getting things done. The motive is a fuller reward, the fuller reward the outcome of saving—economy. In the pursuit of better method—the economy of effort—industry divides and subdivides, and specialisation is carried to a finer point.

And commerce, from the same driving impulse of economy—reduction of costs and increase of profits—is constantly seeking out facilities. The driving impulse has brought forth modern means of transport for in transport the creation of wealth is essentially the saving of time. Further, both on account of time saving and security, the driving impulse has called into being the world wide structure of banking and credit is the world-wide medium of exchange.

This is the brighter side of the picture. Unhappily there is a darker side. These great and beneficent changes have had to fight their way against a levée of errors. The spread of knowledge has been obstructed

by contempt and class prejudice, and the power of mind, unvalued left to run largely to waste. Instead of seeing that co-operation is natural and necessary, and must become more intricate and complete as civilisation rises, theorists, failing to perceive that in the conquest of nature men advance as organic hosts or communities, have made them out to be independent and contending atoms. The truth about competition and all it means is that co-operation and exchange should be free; that freedom is the life of industry and enterprise. But to claim so much—a necessary claim—is very different from ignoring the truth that men economically are a brotherhood. The jealousy of individuals fostered by this falsehood, has inevitably spread into the jealousy of nations.

The plain every-day truth that supply stimulates and governs demand, just as much as demand stimulates and governs supply, though a truth which every body every-where acts upon is not taken into account. *The truth is the open secret of fortunes; enterprise everywhere relies upon it.* Nevertheless, the would-be monopolist is forever haunted by the fear of producing too much lest prices should go down. All experience proves that prices never go down unless the total of earnings and profits at the same time gone up. The world in which the consumer reaps all the benefit of increased production and the producer none is a book made and phantom world.

Does it assist production to maintain and truckle to monopoly and share in the "excess" proceeds? As you cannot truckle to monopoly without strangling enterprise it is clear that this mode of raising revenue involves a double impoverishment. Does it assist the creation of wealth to spend the public money in defence of monopoly, though by the greatest captains of industry the system stands condemned? Again, manifestly not. Neither, then, in safeguarding common security nor in aiding the production of wealth have our rulers so far been acting up to their public trust. —*Westminster Gazette*

GERMANY MAKING BID FOR DYESTUFF TRADE

Japan's Fear of German and British Competition

The dye-stuff market is exceedingly dull and inactive due to buyers' hesitation in purchasing. German manufacturers are now making bids for the Japanese market together with British manufacturers and although their supply is still too small to be a scare holders are nervous. Consumers, too, have grown timid as they think further importation will force down the price here.

The slumps repeated since the middle of March in the stock market and several other lines have already caused much uneasiness in business circles and in the different lines men are mutually suspicious about each other's credit. In the textile trades this uneasiness is accentuated by bankers' flat refusal to advance new loans. This is in its turn affecting the dye-stuff market.

Provincial textile manufacturers are trying to refrain from covering their needs as much as possible and are placing very few orders with dye importers and manufacturers.

A prominent dye importer said that this adverse tendency was much accentuated by the resumed importation of German dyes and the fresh arrival of British colors. "The arrival of British colors is not very large although it is magnified very much by rumor-mongers in the market," said the importer. "British manufacturers may be endeavoring to establish their market in Japan, but they are believed by Japanese importers to have not much cargo to spare. German manufacturers have, on the other hand, started an active bid for the market here and their goods are now actually in the market. However, the arrivals so far are small. I do not expect, in view of the condition of Germany at present, that German manufacturers will

be able to maintain even this poor supply regularly. Therefore, is it too premature to anticipate any radical change in the dye market here on that score. But consumers believe otherwise and put off their purchase."

Under these conditions the price is rather unsteady, but because of the comparatively small supply from the United States on which Japan is still mainly dependent it is not marked with any decisive tendency to fall away. Rodamine B extra is still quoted at Y70 per kin. Mixed red is quoted at Y4 per kin. Acid green is offered at Y15 per kin. Patent blue N is quoted at Y130 per kin. Orange A conc is quoted at Y450 per kin. Benz/o fast orange is quoted at Y60 per kin.

Direct black, methyl violet, and some allied colors which are manufactured in Japan and exported are very active in contrast to the other kinds of color, because China is now actively buying those colors.

(—*Japan Advertiser*)

TRADE WITH GERMANY

Advocated in France

The question whether or not French industry, commerce, and finance should resume business relations with Germany has lately been discussed in the French Press. Some hold that it is unpleasant from the point of view of national sentiment to enter into friendly dealings with the late enemy, but the absolute necessity of commercial arrangements with Germany is strongly expressed here in influential quarters. One authority says that a prejudiced opinion has spread abroad against German merchandise on the plea that what Germany always sells abroad is cheap and nasty stuff fit for dumping. The facts are otherwise. A great variety of goods is now wanting in France, because these categories of wares cannot be produced at home in sufficient quantities, or else their manufacture is no longer possible, whereas these descriptions of goods are plentiful beyond the Rhine. It is urged that the Allies of France can furnish the merchandise wanting, and that it is improper not to apply to friend and to favour their economic recovery rather than help the Germans.

But the fluctuations of exchange are used as the chief argument, and they come into play with peculiar force at this moment. A French franc is worth the value of three francs in Germany, whereas the exchange rate of French standard money falls short by one half of its free value in the United States. Thus goods bought by France in Germany cost six times less than in America.

Economists also insist on the fact that the resumption of trade with Germany will be one of the principal factors to reduce the cost of living. M. Paul Bignon, French Commissary General in Great Britain, says: "We are spectators in France of this strange spectacle, that the Americans and the British are selling to France—at what prices—merchandise made in Germany!" The Chambers of Commerce of France seem to begin to take the same view for the president of the Chamber of Commerce of Lyons echoes the opinions of his colleagues, as well as his own, that notwithstanding questions of sentiment trade should have been resumed with Germany the instant the Peace Treaty had been ratified.—*The Daily Telegraph*

Hookworm Disease. A small leaflet issued by the Publicity Bureau states that this disease is widely and heavily spread. As a result of an investigation at Nagapattam in which 10,000 persons were examined it was found that 98 per cent were infected. It causes mental deficiency, physical decay, poverty and economic inefficiency, sterility, impotence and reduced frequency of conception. It retards mental development in children. After treatment, marked gains in weight, and physical appearance and mental progress will be noticed. Those who are interested in checking the growth of this disease are advised to address the Surgeon-General with the Government of Madras.

COMMERCIAL LAW CASES.

Director's disqualification to be an officer

An action of interest to company directors came before Mr Justice Shearman. A limited company claimed the repayment of £132 with interest at 5 per cent from a man who had acted as Managing Director of the firm. A resolution was passed at a Board meeting, purporting to appoint the defendant Managing Director upon his acquiring the necessary share qualification and declaring that the appointment should be confirmed and the salary was to be left to a later date. It was argued for the plaintiffs that it was not within the powers of the directors to appoint him and that the chairman, without the knowledge of the other directors paid to the defendant salary and expenses. Counsel for the defendant contended that as the money had been paid to him as an officer of the company it was irrecoverable. His Lordship in giving judgment for the plaintiff Company, said that it was well settled law that if a man obtained money under colour of an office to which he had no right the company could recover that money.

Insurance of enemy goods

Before Mr Justice Rowlatt came an unusual point on a claim for a loss under a policy of marine insurance dated July 19, 1914. The policy which was issued in Sydney, insured the Electrolytic Smelting Company of Australia against the loss of copper ingots to be shipped from Sydney to London and there transhipped for Hamburg. The bills of lading made the copper deliverable to the smelting company or its order. The plaintiffs in the action—the Bank of New South Wales—in pursuance of an agreement with Aron Hirsch and Sohn of Germany paid the invoice price of the copper to an agent of that firm and they were to be repaid in London on the due date. They were not paid by Hirsch and Sohn. The copper was seized by the customs authorities in London and was eventually condemned as prize. It was contended for the plaintiffs that the policy sued upon did not deal with a German insurable interest, and they were not merely the assignees of Hirsch and Sohn. In dismissing the action with costs, Mr Justice Rowlatt said that the policy was simply a policy on the goods of Hirsch and Sohn. The pledging of it with the plaintiffs could not alter the rights conferred by it. Thus the plaintiffs had only stepped into the shoes of Hirsch and had no more than Hirsch's rights.

Liability for keeping dangerous substance

The action arose out of an explosion of dinitrophenol an ingredient in the manufacture of picric acid which occurred during a fire at the works of the defendant company, the Rainham Chemical Works limited. The fire damaged the premises of the two plaintiff companies and they claimed damages. Lord Justice Scrutton had held that the defendants were liable on the principle laid down in *Fletcher v Rylands* that he who brings a dangerous substance on his land must keep it within bounds. On appeal the defendants took the point that they were merely working under the instructions of the Ministry of Munitions, that a Government Department and its agents were protected from liability, and that the doctrine in *Fletcher v Rylands* did not apply where the land was properly used for the benefit of the community and the defence of the realm. The court of appeal dismissed the appeal. The Master of the Rolls in his judgment pointed out that on the authorities cited liability existed whether the land was or was not owned by the person who was responsible for bringing the dangerous substance on it, and whether that person was or was not aware of the danger at the time when he brought the substance there. Lord Justice Groucher thought that the responsibility of the appellants was technical only.

Contract of Indemnity

Before Mr Justice Sargant, the liquidator of the plaintiff company, which had sold its undertaking to the defendant company, made a claim for interest on debts which had been paid by the plaintiff company. There was an agreement between the plaintiffs and the defendants under which it was provided that, as part of the consideration for sale, the purchasing company should discharge all the debts of the vendor company. The defendant company found that it had taken over greater liabilities than it could bear and the plaintiff company paid large sums on liabilities which the defendant company ought to have paid. Meanwhile the plaintiff company had begun an action for specific performance of the agreement, which ended in its favour. The judgment in the action was affirmed both by the Court of Appeal and the House of Lords. The Judge decided that the purchasing company was liable to pay interest, but as the vendor company had not claimed interest it was precluded by the previous judgment from doing so.

A Delivery Note

Before Mr Justice Darling, the plaintiff's claim was for the price of a quantity of flour which they said was sold and delivered to the defendant. The flour was lying at the Victoria Docks where the defendant sent for it. Owing to some mistake he failed to get it, and he wrote to the plaintiffs enclosing the delivery order and cancelling the contract. A ledger clerk at the docks had marked the order "comply". The plaintiffs contended that in these circumstances the property in the goods had passed to the defendant. His lordship declined to take that view. He said that although the writing of the word "comply" on the delivery order was an authority to hand the goods over, it did not amount either to actual or constructive delivery.

Sub-underwriting Contract

The Sub underwriting contract was the printed form of letter which is commonly used. The capital of the company was to be £ 400 000 divided into, £ shares, of which 350 000 were to be offered for public

subscription immediately after incorporation. The Trust agreed to advance the £ 20,000 required to be deposited on the registration of the company, to underwrite £150 000 of the 350,000 shares, and to pay preliminary expenses to the time of allotment. The plaintiff signed the sub-underwriting letter and handed it to the Trust with a cheque but he did not sign any application to the company for shares. The Trust applied for allotment and paid the amount of the plaintiff's cheque to the company. Thereupon shares were allotted and the plaintiff's name was entered on the register of the company. The plaintiff said that his solicitors had written a withdrawal of the application before he received notice of allotment and that therefore there was no contract to take the shares. His lordship held that the sub-underwriting contract made by the plaintiff was made for valuable consideration and was irrevocable. He said that it conferred authority not only for the making of the application but for the maintenance of the application as an effectual application down to the date of its final acceptance by the company.

NOTES FROM JAPAN.

Increase Production

Referring to the wastefulness of war and to the serious difficulties under which Europe is labouring, the *yorodsu* emphasises the need of encouraging and increasing production. At the present moment the only means to promote the happiness of mankind is to increase production. Increased productivity is all important to the world, but the labourers are demanding a larger share of industrial products in return for reduced services. This tendency is discernible even in Japan.

A Labour Commission

The Government has created, says the *Osaka Asahi*, a Provincial Industrial Investigation Commission, the function of which is to investigate and consider important industrial affairs that may be referred to it by the Premier. The members include the labour delegates who represented Japan at the Washington Conference. The paper says that these institutions are only intended to shift the responsibility of the Government. It warns the Government against trying to suppress labour movements by force or the display of authority, and advises the authorities fundamentally to change their attitude towards the issues of labour.

The Price of Silver

The *Tokyo Asahi* says that the reduction of percentage of silver in coins may slightly decrease the demand for the metal for coinage purposes but it does not think that it will cause a decline in the price of silver. Unless speculation in China and India is ended, it will even be impossible to meet the coinage requirements of Europe, failing a substantial increase in output which is not likely. The centre of the world's silver market is changing to New York. If New York maintains its present position for the next three years, the actual control of the world's silver market will not return to London. It is an undeniable fact, says the paper, that exchange rates are now based not on the standard quotations in London, but on the actual market rates, and this may be taken as one of the evidences that Great Britain is losing her economic authority in the world.

Trade and Prices

In the first half of last year, says the *Jiji*, imports showed a great excess over exports but this was reduced by the increase in exports in the 'second half-year', which was largely due to economic prosperity in America. Similar prosperity cannot be expected this year and there are unmistakable signs of a decline in American exports owing to the suspension of economic aid to

Europe Merchants and manufacturers in America are generally following a retrenchment policy and it is clear that the American demand for raw silk and other Japanese merchandise will suffer a great falling off. On the other hand, Great Britain and other industrial Countries are arranging to recover their markets in the Orient, and as a result Japanese trade in that part of the world will suffer considerably. As a matter of fact the sugar industry of this country has already been affected. Another important factor is the rise in prices in this Country. Now that the world's trade is reverting to normal conditions it is natural that Japan, where prices are the highest in the world should turn into an importing nation. The increase in imports into this country owing to the circumstances mentioned will have the effect of decreasing currency and of lowering prices. In the interest of the people therefore the paper welcomes the excess of imports.

Fibre in Japan

Japan has discovered a new fibre to mix with cotton, which promises to cause a revolution in cheap

fabrics in the far East. It is a kind of sea grass known as sugamo which when properly treated and mixed with raw cotton makes a thread strong and useful for cheapening the material which is now so high in price. The annual value of raw cotton imports to Japan is about 100 000 000 yen with about 18 000 000 yen for rumi and 52 000 000 for wool but if the mixing of raw cotton with sea grass proves a success such large imports of raw cotton will not be necessary.

It is sea grass flourishes plentifully about the shores of Japan so that there will be no difficulty in obtaining a sufficient supply if it comes into general use among spinners. The botanical name of this grass is *phyllospadix scouletii* or sugamo in Japanese but in the different places where it grows different names are used by the Japanese, such as umi no chono ryunguno and so on. The quantity available is believed to be unlimited.

(The Japan Magazine)

FOREIGN TRADE NOTES.

Raw materials for the mother of pearl industry in Italy are greatly needed, together with new machinery.

A deficit of 120,000 000 francs is reported in the accounts of the Belgian Government railways for 1919.

A law has been introduced in the Portuguese Parliament for granting financial autonomy to the Portuguese Colonies.

Between February 6 and 20 1,500 tons of Zanti currants, valued at £250,000 were shipped from Greece to the United States.

The German Potash Syndicate reports production of potash for 1919 at 946,000 short tons of which 264,000 tons were sold abroad.

A further increase, the fourth since the beginning of 1919 has taken place in the schedule of prices of potash for German home consumption.

During the last ten years according to an official report, the importation into Italy of Japanese mother of pearl buttons, has increased 100 per cent.

Plans for air traffic between Sweden and Poland are under consideration by two Swedish companies, one of which is being supported by British capital.

Imports from the United States of condensed milk, butter, cheese, sugar, and canned meats have been prohibited, until further notice, by the Italian authorities.

The shortage of sugar, butter, coffee and milk is so great in Italy that the authorities have decided to tighten food control and to return to strict rationing.

During the last financial year the expenditure of the Belgian Government amounted to 8500 000 000 francs being an increase of 1 000 000 000 francs on 1918.

The German postal authorities have decided to raise the parcel post rates by 67 per cent and to impose a letter rate of 30 pfennigs up to 20 grams and a postcard rate of 20 pfennigs.

According to statistics recently published the gross earnings of 202 railways in the United States for 1919 increased 5.25 per cent whilst the net earnings decreased by 15.80 per cent.

About 10 000 tons of currants were available for shipment from Greek ports last month. The quotations for the fruit were 1s 3d higher than in January, but its quality was reported to be poor.

An official statement gives the projected expenditure of the Portuguese Government for 1920-21 at the sum of 234 679 251 escudos. The revenue for the same period is estimated to produce 119,615,317 escudos.

A Consular report states that the harbour works at Kobe are now nearly completed and that a depth of 36ft

has been obtained by constant dredging along the new piers. The works were started 12 years ago.

During the first eight months of 1919 vessels totalling 990 717 tons used the piers at Kobe, whilst 4,284 757 tons of shipping from foreign countries entered the harbour and discharged their cargo on lighters in mid stream.

American exports to Italy have, during the past three months, declined 20 per cent, and owing to the high exchange rates the Italian Government has laid more stringent rules to prevent the export of capital from the country.

It is reported from Tiflis that the local authorities have entered into a contract with an English company for the sale of Georgian produce and merchandises in foreign markets. The capital involved in the arrangements is stated to be £5 000 000.

British investments in the Latin Republics exceeded £1 000 000 000. There is sharp competition for business and business men hold on to knowledge of Spanish and Portuguese in which some of the richest markets of the world are being won.

Mr Cassin Brown of the Indian Geological Survey who has been on duty for some time in India has been attached to the office of the Indian Food Commissioner in London and is bringing to light much valuable knowledge to bear in answering inquiries about Indian mineral resources.

Board of Trade accounts. The form of the accounts of the Board of Trade is being revised, the number of headings being increased from 825 in 1900 for imports and from 606 to 1360 for exports. Additional headings are opened under 'machinery', 'chemicals', 'cottons', 'wires', 'glassware', 'brassware', 'cutlery', 'textile implements', 'instruments & vehicles'. The result of this new trade will be made both by quantity and by value.

More British Exports to America. According to the Board of Trade returns for January last there is a steady upward tendency of both imports and exports, the proportionate difference between the two being small. They show 105 millions of exports for January 1920 as against 45 millions in January 1915 while the former are extremely promising. In these quantities of goods are exported to America and to countries which are in debt to Britain immense quantities being received from countries which she is in debt. Improvement is noticed in her exports to the U.S.A. chiefly in cotton and woollen goods and the exchanges between America and Britain cannot be

set right until the latter receives less and sends more. Moreover, Britain acts as a buying Agent for the whole of Europe. Thus she bears not only her own burden of debt but also that of Europe to America in terms of American dollars in exchange for pounds.

The isolation of Russia is said to be one of the causes of social disturbance in Europe since Russian supplies not being forthcoming the rest of Europe is forced to draw its food and raw material at exorbitant cost from America.

The Association of British Chemical Manufacturers has published a Directory of Members and a classified list of their Manufactures in seven languages.

Dutch and Scandinavian import houses in the Argentine represent important firms in Switzerland and other parts of Europe who turn out big power plants are preparing to compete with the Americans.

A great shortage of dye prevails in Hong Kong and attempts to obtain supplies from the United Kingdom have not so far been successful.

Canada is applying to France for a quantity of shoes and woollen goods. There is an unusual demand for sheepskins from that country.

The production of coal in Canada during 1919 is estimated at 14 000 000 tons, computed with 14 087 900 tons in 1918.

The local authorities in Mauritius have caused great discontent among the mercantile community by suddenly proposing to levy a special duty of Rs. 10 per ton on all sugar held in stock at that rate.

The price of rice in Mauritius—where it is the staple food of the labouring population—is on the plantation—has been considerably reduced as a result of large imports from Malaya and elsewhere which have taken place during the last four months.

Owing to the duties charged on the large imports of wines and spirits through the port of Nassau (Bahamas) from the United States, the Budget deficit for the last financial year estimated at £1 0805 has been turned into a surplus of £110 418.

An arrangement has been made between the Canadian National Railways and the French railway authorities for mutual exhibits of the produce and manufacture of the respective countries on special trains that will call at the chief towns of France and Canada.

Export trade of New Zealand

Exports of produce in the 10 months ended October 1919 were £465 7000 against £4 050 000 in the corresponding period of 1918. Exports for the year ended October 1919 exceed £50 000 000.

NEWS AND NOTES.

H E Lord Willingdon performed the opening ceremony of the Madras Stock Exchange on April 7.

The grant to the Government of India on account during the current year is estimated at Rs. 11,75,00,000 of which Rs. 7,25,00,000 will be credited to Railway and Rs. 4,50,00,000 will be appropriated to meet the capital loss on the sterling and gold holdings in the paper currency reserve.

The membership of the London Chamber of Commerce exceeds 9000.

According to an authoritative informant of the New York Sun the British Government has received from Germany in payment for foodstuffs and other supplies between £32,000,000 and £40,000,000 in gold. This gold does not appear in the Bank of England statement but is held in London for the account of the British Government and is estimated for shipment to New York in four instalments.

The State Department, United States, has submitted to the Supreme Council a draft to plan for the resumption of commercial relations with the Soviet Government.

The total quantity of yarn spun during the month of January amounted to 60 million lbs. and the value of goods to 70 million lbs. as compared with 52 million and 27 million lbs. respectively in the corresponding month of the preceding year.

The following resolution of the Government of India dated 15th March is published in the *Fort St. George Gazette*.

No. 849 F.—In consequence of the acceptance of the recommendation of the Indian Exchange and Currency Committee that the exchange value of the rupee should be fixed at one-tenth of the gold content of a sovereign the Government of India have, with the approval of the Secretary of State for India, decided that the rate of Rs. 10 to the £ shall be adopted for the conversion of sterling transactions into rupee and for conversion of Government accounts and statistics with effect from the 1st April 1920. The budget estimates for the year 1920-21 have been prepared on the basis of the 15 rupee rate but they will be recast on the new basis as soon as possible after the 1st April.

The new rate of Rs. 10 to the £ will also be applied to the expression sterling as far as practicable in all official documents and correspondence from the 1st April 1920. Gold coin and bullion, however, will continue to be valued at Rs. 15 per £ in all Government accounts and returns inclusive of the accounts of the Paper Currency and Gold Standard Offices.

Speaking at the reception of the National Indian Association in honour of his election to the Royal Society Sir Jogendra Chandra Bose emphasised that it was not by entering into controversies but by steadfast work by proving that the people of the world be in complete contact India is to stand that Indians would raise their Country and secure the betterment of humanity.

The price of cotton yarn in Madras attains 12 per cent of the cost. Experiments have shown that the process of extraction can be carried on with every prospect of financial success. The yield amounts to 4,000 lbs. to the acre. In the North Provinces there are about 60,000 acres covered with mugh pump. In Madras they have obtained 100 lbs. of fruit from an acre. The oil contains 3 per cent of castor oil and is a valuable by-product. In 1917 there were 75 distilleries in the Madras equipment produced 2 million gallons of oil. The Government is doing its best to form the rest of the Madras pump.

Mr. P. V. Sastri, manager of the firm of Messrs. P. V. Sastri & Company of Madras, who proceeded to Europe and the United States last year returned to Madras. He went on a purely business nature and in the United States he made a prolonged stay studying the latest method of dry spinning.

A general meeting was held at the Mahajana Sabha Hall, Madras, to consider the question of starting an institute for warping and to encourage handloom weaving. Mr. J. Chidambaram, M. P., was in the chair. It was resolved that a limited liability company be formed for establishing a warping machine factory in the city of Madras. The share capital of the company was fixed at Rs. 50,000 and the shares were of Rs. 100 each. It was further resolved that the company be rendered to handloom weavers by supplying ready warp duly sized with length and breadth suitable to them at a cheaper rate.

than what it now costs them to work the handloom and that the Government be requested to render departmental help with expert aid and advice and such other assistance, in the shape of money grants towards recurring expenditure besides giving the site and the buildings for establishing the institute.

Mr Chandulal M Kothari, Honorary Secretary of the Madras Stock Exchange, wrote to the Press as follows:—

"During the last six months I have had promoted two limited concerns, the Malabar Timber Company and the Malabar Forests and Rubber Company with a capital of two crore and one crore respectively. When people in Bombay with a Board of Directors at such a great distance consider such a field an industry a profitable one—and the quotation of the price of the shares of the first concern has proved that the industry must be profitable—how can it be that the Madras Presidency with all these sources of timber and rubber allows others to exploit and take advantage of it? If that we on this side believe that the industry is not paying? If so, the either the people must be allowed the Presidency are enlightened to believe that it is so."

it that we on this side have not sufficient technical knowledge about forestry and agriculture? To say this of a Presidency which is drawing its income and resources chiefly from agriculture and forestry amounts to a mere mockery. Hence, the only conclusion that we can draw from this lithargy and inaptitude is that Madras in spite of its resources sufficient technical and business knowledge at its back is backward because of want of proper organisation and capital. Will capital in the presidency continue to remain so shy as to allow others to exploit our own resources and make huge profits? Will not such flotation outside the presidency for exploitation of our own resources be an eye opener to the investing public and businessmen of the Presidency?

The Panchayats. It has been notified that 157 Panchayat Courts will be established in the districts of Chingleput, Trincomalee, Annamalai, Tanjore, and Madurai. The number of such courts being 65 and 92 respectively in the Annamalai and Malabar District.

Dr. D. S. Iyer. The appointment of Dr. Lamin B. and Dr. H. S. A. Akbar as Professors of Chemistry in the Government College, Madras, has been since the 1st of the month of June.

SHORTAGE OF RICE.

In 1918-19 the all India average yield per acre was less than 20,000,000 lb. as against 25,000,000 lb. in the previous year. But the average yield per acre which in Burma is normally about 11,000 lb. is no less than 14 lb. with the result that the crop yielded only 25,500,000 tons as compared with 32,500,000. The difference was due to the defective monsoon of 1918. In consequence of the resulting depletion of stocks, the regular India absorbed last year almost the whole of the Burma surplus available for shipment taken 1,750,000 tons in nine months, while a small balance went to countries having a large emigrant Indian population. In the present year India's requirements are likely to be much smaller than after the bad monsoon of 1918. The final forecast for the entire crop makes a substantial improvement of nearly 2,000,000 tons, though the falls are short of the normal yield. If reports from India were unrestricted the demand of foreign countries would probably draw out stocks required for replenishing the reserves which are a feature of the rural economy of the country, and prices would be forced up to a level causing

hardships to the poorer classes. Hence it was decided that exports of foreign countries should be limited to the surplus available to be available after providing for India's need.

England is to be content with little more than a quarter of the normal previous import, though it should not be forgotten that a large part of this normal shipment was re-exported. On the whole, England is said to have been remarkably well served by the maintenance of control. After meeting the estimated Indian requirement of 700,000 tons, there is a balance of some 560,000 tons of clean rice for other countries. It is held partly that the first claim is for India populations in British Colonies. The allotment of the surplus of the first quarter of the year in tons has been—Ceylon 90,000, Straits Settlements 60,000, Mauritius 14,000, the United Kingdom 50,000, other countries 85,000, total 299,000. This leaves a balance of 261,000 to meet the requirements of India.

THE WORLD MARKET

THIS Department, we open every month, to our readers, particularly subscribers, advertisers and correspondents. Business enquiries of a genuine character from firms and individuals are published. As regards their commercial standing we assume no responsibility. The names and addresses of the persons whose enquiries appear here are not revealed to the general public for reasons of their own. Replies to enquiries should be addressed as indicated below and accompanied by the correct code number, which on receipt by this office, will be duly forwarded provided the usual postage stamps are enclosed therewith. Trade enquiries will be published *free of charge* on condition that brief particulars of the goods referred to, the capital of the firm, when established, and its bank references are given. But such particulars are merely for our files and are not intended for publication.

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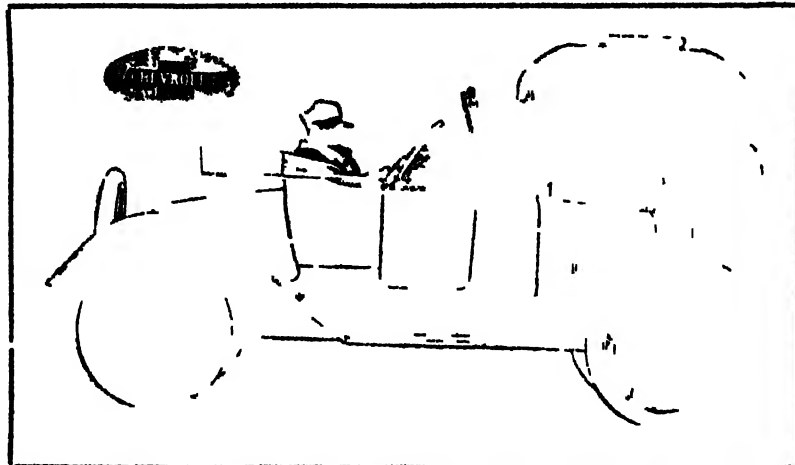
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Subscribed**

PROSPECTUS

The Company is being formed for the purpose of acquiring the business of Mill Creek, near a Simon Mills Turbine Flowing which has been under lease of a number of years. The company comprises a large block and other mill equipment as well as that of saw, water pipe, and other equipment and forming, and it is expected to carry on the trade of manufacturing engineers for the better and for the Mill gear and water works of the State. It is expected that the company will be able to supply the local market for the same and commence the manufacture of building equipment, which is the chief business of the company. The information will be given to the public of the company.

The present movement in the West is much different from the value of the Revolution of 1776. Contrary to the former, it is not a Supreme and independent authority, not an iron fist, it is a social system that produces the four technical sciences, and, taking advantage of the progress of the science, we are able to enjoy the wealth of the world and to change the social conditions of the West. It is a new and complete system of thought and organization that will change the world.

The War in Vietnam is a spoils war. The following statement is a

plumage sold well at a price nearly 50 per cent below the present market price.

In 1911 the Millington Works secured the services of Mr J Mulholland, practical moulder and pattern maker, specially experienced in the manufacture of rain water pipes in the United Kingdom and under an

together and we were able to get
 enough for the construction of the
 pipe finished at 11:30 a.m. and
 we opened the rough pipe by hand
 made in India. The pipe turned out
 to be 1/2 inch in diameter and 1/2
 inch thick. We had to add a 1/2 inch
 We are capable of producing only 10
 feet of pipe and a pipe 1/2 inch
 in diameter. The pipe is 1/2 inch
 in diameter and 1/2 inch thick.

The World Bank is a major source of financing for the reconstruction of Iraq. It has provided the Iraqi government with a loan of \$2 billion in 1990, and a further \$1 billion in 1991. The bank has also provided technical assistance to the Iraqi government in the form of grants and loans. The bank has been instrumental in the reconstruction of Iraq, and has played a major role in the development of the country.

[illegible]

(1) C_{10}H_8 is a bicyclic compound with two fused benzene rings.
 (2) C_{10}H_8 is a bicyclic compound with two fused benzene rings.
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 (10) C_{10}H_8 is a bicyclic compound with two fused benzene rings.

Directors The following are the members of the articles of Association to the quality and remuneration

It has been determined by the Court that the number of Directors shall not be less than two nor more than five. One of the partners for the time being resident in Calcutta is the firm of Messrs N. K. Saha & Co. who are in business and in the absence from India of all such partners their respective holding a full and sole power of attorney from such firm shall

shall not be liable to retirement on rotation or be subject to the provisions herein after contained relating to the retirement and classification of Director

As per the plan and the part
ner or assistants of the firm of Yeary
and Sullivan I am qualified to be a
partner in the firm of Yeary and
Sullivan.

[illegible]

On the 17th inst. Mr F. K. Barker, a partner in the firm of Messrs F. K. Barker, the Managing Agent of the Company and Secretary of the Board of the Company, informed me that he had a letter from the Agent of his interest in the above two boats referred to.

Application for Shares Application for shares in the company can and should be made by the company itself. The company can be held to a fault for any of its behavior, and will be sentenced to a fine for its application for the shares of stock. All of the Act the company is required to pay in which the shares are now proceed to all extent will be the under the Act at seven years.

If the number of shares allotted is less than the number of shares applied for, the surplus will be credited in reduction of the amount payable on allotment.

It does not pay any subsequent instalments in share allotted when due will render payee's payment liable to forfeiture. Particulars and forms of application may be obtained from the Company's Managing Agents Bankers and Solicitors.

Copies of the Memorandum and Articles of Association of the Company and of the bye laws above mentioned may be inspected at the Office of the Company's Solicitor or Managing Agents during the usual business hours.

"COMMERCE & INDUSTRIES"

Vol.

MADRAS, JUNE, 1920.

No. V

THE INDIAN CHEMICAL SERVICE.

THE report of the Chemical Services Committee 1920 has been published.

The Committee was presided over by Prof. J. F. Thorpe, C. B. F. D. Sc., Ph. D., F. I. C., F. R. S., Professor of Organic Chemistry in the Imperial College of Science and Technology, London who arrived in Bombay on the 15th November 1919, toured through the Provinces, and concluded the business on the 28th February 1920. The function of the Committee is "to formulate proposals for the organisation of a Chemical Service for India, and for the location and equipment of research laboratories."

The President observes that the Chemical Industries of India can be adequately developed with the aid of an efficient Government Chemical Service and "that if the resources of the country were developed to their fullest extent India would take her place in the front rank of industrial communities." He acknowledges the "unquestionable need for technological institutes" in India. There should be Trades Schools to train foremen in the "technique of their trades." An Industrial chemist with adequate training in the methods of Research and knowledge of the principles of Engineering and Machine drawing will be in a position to master the

technical details of the chemical processes concerning the factory work. He will thus be in a position to manage and control the working of a Factory and may even take up the work of a consulting chemist. Another class of chemists will be the Professors of Chemistry in Universities who are to be researchers in chemistry and teachers with adequate training both in the Science and in Research. Just like the hospital experience necessary for a medical man or the workshop practice for an Engineer, factory experience in some chemical works is essential for a chemist. In India there are very few chemical factories where students can receive adequate training. It is proposed to impart instruction by means of large scale appliances involving the use of metal apparatus instead of the glass apparatus now being made use of. It is quite possible to erect a Laboratory on a small scale with types of "every kind of plant used in chemical manufacture." In order to afford facilities for factory training, it is proposed to erect demonstration factories. The establishment of Provincial Research Institutes in the chief industrial centres in each Province, and of a Central Research Institute under Imperial control at Dehra Dun is recommended.

One satisfactory feature of this Report is the proposal to recruit the Chemical Service mainly from Indian sources with a view to achieve success and to provide for adequate chemical training in Indian Universities. It is to be seen how far this proposal will be translated into practice. The Committee recommend the formation of the Chemical Service with the primary object of encouraging industrial research and development in view of the experience gained during the recent war that the Scientist and the Manufacturer should co-operate and work for the common cause. In England the manufacturers who are admittedly enlightened and enterprising employ their own chemists in their own research laboratories for the purpose of making useful discoveries, "the results being placed on a commercial basis and worked either by patent or in secret for the benefit of the firm concerned." This system cannot be altered and is bound to continue in the interests of the firms themselves. With a view to develop the industries of this country both for the benefit of the State and the manufacturers and in order to investigate into the problems of importance which are neglected or passed over by the firms, being less remunerative, the proposed Research Laboratories are brought into being. In England, numerous firms dealing in the same industry form themselves into Research Associations and are aided by the Department of Scientific and Industrial Research by contributions usually to the extent of £1 for every £1 subscribed by the firms forming members of the Associations. "The payment by the Department is for five years by which time the members of the Associations will have realised the value of research and the Associations become self-supporting. The conditions prevailing in England where the industries are highly developed and the technical and scientific education and training are advanced and

controlled by the people, are quite different from those prevailing in India where the material resources are undeveloped, education is controlled by Government and the people are exposed to foreign competition and are not protected by State aid, in spite of their vigorous attempts to make the country self-supporting and to make India one of the leading manufacturing and exporting nations of the world. Hence, the people are left behind and the Government Departments of Agriculture, Forest, Industries and Commerce have taken the lead in carrying out organised work in research and investigation. For instance, the Forest Department proposes to erect plant and machinery to investigate the possibilities of paper manufacture from forest grass, match making and the extraction of essential oils and tannins. These Departments, when addressed by an inquiring firm for any information relating to manufacturing industries, generally refer such firm to some manufacturing firms in India who would naturally decline to furnish such particulars in their own interests. Thus the Government Department have shown to be lukewarm in the matter of assisting Indian firms.

The terms of reference to this Committee were —

(1) To consider whether an All-India Chemical Service is the best and most suitable method of overcoming the difficulties and deficiencies pointed out by the Indian Industrial Commission (2) In the event of the Committee approving the principle of an All-India Service, to devise terms of recruitment, employment and organisation, to indicate the extent to which chemists already in Government employ, should be included in that Service, and to suggest what should be the relations of the proposed organisation with the public and with Departments of the Government of India and of Local Governments.

(3) In particular to frame proposals for the location, scope and organisation of institutions for chemical research

The Committee was constituted with seven members of whom Sir P C Ray is the only Indian member

The recommendations of the Committee are summarised as follows —

(1) That a Chemical Service called "The Indian Chemical Service" be constituted and controlled by a Director General

(2) That a Central Imperial Chemical Research Institute be erected at Dehra Dun under the Director General of the Chemical Service, as Director, assisted by a member of Deputy Directors

(3) That each Deputy Director should be in charge of a separate Department and that, in the first instance, there should be four Departments, (a) Inorganic and Physical Chemistry (b) Organic Chemistry (c) Metallurgical Chemistry (d) Analytical Chemistry

(4) That a Provincial Research Institute under the control of the Local Government should be erected in each Province near the Chief Seat of Industry in that Province and that each Provincial Research Institute should be under a Director of Research

(5) That the functions of the Central Imperial Institute should be as follows (a) To create new industries and to carry out the development of new processes up to the "semi—large" scale or further if necessary (b) to investigate those problems of a fundamental character arising from the work of the Provincial Institutes, which have been transferred to the Central Institute by the Local Director of Research in consultation with the Director General. Such problems will be those which have no apparent immediate practical importance, but which in the opinion of the Director-General and the Director of Research are likely to lead to discoveries of fundamental industrial importance affecting

the industries of the country generally, (c) to assist in the co-ordination of the work in progress in the Provinces, both by means of personal discussion between the officers of the Central and Provincial Institutes during the course of the tours made by the Director-General and the Deputy Directors, and by means of periodical Conferences of Provincial and Imperial officers, (d) to carry out such analytical work as may be required and to correlate the methods of analysis in general use throughout the country, (e) to maintain a Bureau of information and Record Office; and (f) to issue such publications as are considered necessary

(6) That the functions of the Provincial Research Institutes should be as follows (a) to maintain close touch with the works chemists and with the works generally and to work out any problems which may be submitted to them, (b) to develop and place on an industrial scale new industries which have been previously worked out on the laboratory and "semi—large" scale by the Central Imperial Institute, (c) to carry out such other work as may be necessary to establish and foster new industries peculiar to the Province, (d) to carry out such analytical work of a chemical character as may be required in the province, and (e) to erect and control substations in such parts of the Province as the development of industry may require

(7) That, under 6 (a) above, arrangements should be made by which a firm supplying a problem should have the use of the solution for an agreed period of time prior to its publication.

(8) That members of the Service should be lent to private firms as occasion demanded and should, during the period of their service, be paid an agreed sum by the firms.

(9) That the Research Institutes should not undertake manufacture in competition with private enterprise, but that chemical industries developed in accordance with 6 (b) above

should be handed over to private firms as soon as practicable

(10) That, whenever necessary, experts should be employed to establish chemical industries based on known process

(11) That the work of the Central Imperial Institute should be controlled by a Board of which the Director-General will be Chairman and which will comprise the Deputy Directors and such other persons as the Government of India may determine

(12) That the Central Imperial Institute should have no administrative control over the Provincial Research Institute, but that no appointment as Director of Research should be made without consulting the Director General

(13) That the Director General and Deputy Directors should visit Provincial Research Institutes periodically and co-ordinate the work done in each

(14) That Chemists employed at Provincial Research Institutes should be appointed in the first instance by the local Government in consultation with the Director of research and the Director-General

(15) That Chemists so appointed should be members of the Chemical Service and should be seconded for service under the Provincial Governments and be paid by them

(16) That Agricultural Chemists should not at present be included in the service

(17) That the relations of the Chemical Service to the Forest Department, the Ordnance Department, the Chief Inspector of Explosives, Assay Masters, the Medical Stores Department, the Geological Survey and other Government Departments, employing chemists should be as stated in Chapters V and VII. of the Report

(18) That a Ministry of Science should be created as soon as practicable

(19) That recruitment to the Chemical Service should be as described in Chapter XV of the Report.

(20) That the Deputy Director in charge of Analytical Chemistry should co-ordinate the methods of analysis in use throughout India and should act in an advisory capacity to the various Provincial Government Analysts who should be attached to each Provincial Research Institute

(21) That Provincial Government Analysts should be under the control of the Directors of Research and should take over the chemical work now carried out by the Chemical Examiner and the Government Test House

(22) That the question of the connection of the Indian Institute of Science, Bangalore with the Chemical Service should await proposals from the Council of the Institute

(23) That the location and equipment of the Central Imperial Chemical Research Institute should be as described in Chapter X of the Report

(24) That the location, control and equipment of Provincial Research Institutes should be as described in Chapter XI of the Report

(25) That a Bureau of Information and Record office, a Library, and a Museum should be attached to the Central Imperial Institute and to each Provincial Research Institute

(26) That the Central Imperial Institute should issue applications as described in paragraph 71 of the Report

(27) That a chemical Survey of India should be carried out at the earliest possible moment

(28) That recruits for the Chemical Service should be trained in the manner described in Chapter VI of the Report.

(29) That members of the Service should be seconded to the Education Department and to University Institutions, if required.

(30) That the Government of India should give maintenance and equipment grants to students to enable them to undergo the training in chemical research required for recruitment.

(31) That the position, of the Director-General and of Directors of Research should be as described in Chapter XIV

(32) That the pay, pensions, leave and allowances of the Chemical Service should be as detailed in Chapter XVI

(33) That liberal grants, free from the customary accounts, restrictions, should be given for the initiation of the scheme and for the development of industries through the medium of Chemical Research

The conclusions of the Committee appear to have been based on "a large body of written evidence" placed before them. No one knows what this evidence is and who the witnesses were. At any rate, we have not been furnished with it. We have therefore to presume that such written evidence is not open to the press and the public.

Sir P. C. Ray, the only Indian Member of the Committee, has attached his able note of dissent. It is just like the masterly note of the Hon'ble Pandit Malaviya to the Report of the Indian Industrial Commission, or the note of dissent by the Hon'ble Sir Sankaran Nair in the first despatch on the Indian Constitutional Reforms, or the recent minority Report of Mr Dalal of the Exchange and Currency Committee. It is but natural to expect that the Government will view Sir P. C. Ray's note as they have done in the case of similar minority reports.

Sir P. C. Ray begins his Note by saying, "On principle I am opposed *ab initio* to the creation of an all-India Chemical Service," while the report of the Committee says "that the development of the Chemical Industries in India could only be adequately realised through the agency of an efficient

Government Chemical Service." Evidently, the Government want to take the lead in the matter of the industrial development by beginning at the top while the people of the land have been admittedly backward in point of industrial education and training with the result that the manufacturing industries are yet in the infant stage. Even in England, the opinion of the people or of the majority of the scientists and Expert Chemists does not seem to favour the creation of the Department of Industrial and Scientific Research. In India, Chemical Industries worth the name are yet to be started. Institutions like the Bengal Chemical and Pharmaceutical works which are very few in number have their own Research Laboratories and will make their own arrangements to obtain suitable experts for them.

If India is destined to take her proper place among the manufacturing nations of the world by taking advantage of the vast undeveloped natural resources, the only course that can safely and most economically be adopted is to let the people take the initiative in the matter of industrial work by introducing suitable reforms in the educational system of the country, by starting Industrial Schools, and Technological Institutions where training of the up to date standard can be efficiently imparted by the introduction of the modern methods in all the branches of Engineering and by minimising, as far as possible, the necessity to go to foreign countries for the requisite training and education. The absence of the educational facilities and opportunities for efficient training in this country is keenly felt. This point requires the adequate consideration of the Government and the people if it is the real intention to make India self-supporting and self-contained. The total absence of educational facilities by the employment of modern methods has killed all the power of initiative and originality and the capacity for

invention in the minds of the young men of this country. It will be failing in the discharge of the paternal duty of the State and the non-official leaders of the people to neglect the youth of the land by shutting out all the opportunities for the display of their latent natural powers

The Creation of the proposed Chemical Service is against the natural order of things in a backward country like India where the majority of the people are poor, dependent and helpless, there should be schools for industrial and technical training to start with so as to give impetus to the starting of the manufacturing industries. When such industries are developed, the manufacturers themselves will organise into Associations and demand the aid of the State for Research and Expert Chemists. Then, it will be open to the State either to grant contributions to aid the private Associations for research or to organise a department of Research for the benefit of the manufacturing chemical industries. Instead of helping the growing spirit of the industrial enterprise of the country, the proposed "Service" will add to the existing "Services" when the work proposed to be done by the specialised Service could conveniently be done by the existing Forest and Agricultural Departments. The Department of Industries has been in existence for several years past and the proposals to enlarge this Department in each Province are already under the consideration of the Government. The public are not aware of the real functions of the Department of Industries, what progress has been achieved so far, what particular industries have been developed consistent with the period of its existence and the expenditure incurred and how far the Bureau of information of the Department has served to become popular by supplying useful information to the public to enable them to start new industries so as to justify the increasing

expenditure of the Department. Better progress could have been achieved by granting contributions to private enterprises instead of increasing the expenditure on the Industrial Departments. It may be admitted that there is great need for research work in India. Such work can be better and more advantageously carried out by endowing the Universities with special grants to enable them to equip their laboratories to satisfy their requirements. Thus, considerable saving of public money can be effected.

One of the greatest objections to the creation of the Chemical Service is that it is uncalled for in the best interests of the people under the existing circumstances, that the organisation of the Service is infinitely costly for a poor country like India which cannot afford to spare the enormous funds for the purpose at a time when the people are not well-educated in the industrial and chemical field and the Universities ill-equipped, and that the work assigned for the Chemical Service could be done by the enterprising business firms who have often relied on the advice of technical experts imported from foreign countries. It is very likely that the experts employed in the Service after some years of experience and research work will start their own manufacturing industries instead of sticking up to the Department when there are greater chances for making their fortunes in independent firms. Even when the services of Departmental experts are lent to private manufacturing firms, it is apprehended that satisfactory results will not be achieved as such firms have no disciplinary control over the Government experts.

The proposed scheme is for the creation of a regular Department of Government with Directors and Deputy Directors, Provincial and Imperial, with the highest salaries open to them. The monthly salary of the Directors of Research is Rs 2000—2500 while the

Director-General gets a salary of Rs 3500 excluding allowances, whereas in England, the salary of the Head of the Imperial College of Science and Technology, London, draws only £ 1500 per annum or Rs. 1250 per mensem and the Head of the Government Chemical Laboratory gets £ 1200 to £ 1500 per annum. Further, the proposed scheme involves the expenditure of several lakhs of Rupees for Buildings, Equipment and Maintenance, by way of Capital and Recurring expenditure, for which no definite estimates are yet given. It may be mentioned in this connection that, according to the Indian Industrial Commission the construction of the Imperial Institute at Dehra Dun cost Rs 20,00,000 with an annual recurring expenditure of Rs 5,00,000. The Indian Institute of Science Bangalore, cost Rs 10,00,000 for buildings and laboratories &

Sir P. C Ray evidently has been pleased with "the principle that recruitment for the Indian Services must be made in India." But, it will be realised that in practice this principle will apply to the recruitment of the subordinate staff while the superior Establishment will be European as has been the case in all the Departments of Government. More will depend on the spirit in which the principle is applied in practice. When there is a crying need for Technological Education and Training for which our young men are annually compelled to go to Japan, America and Europe, the organisation of the Chemical Service as recommended by the Committee will only promote the interests of foreign firms established in the land and will help them in the exploitation of the resources of the country while Indians are yet new to the field.

HOW THE WORLD MOVES.

THE SUCCESS OF THE AUTOMOBILE

THE year 1920 marks an epoch in the history of the United States Automobile industry which takes the third place on the list of American industries. Even in the rural districts, horses are being rapidly replaced by motor vehicles. In the current year, it is expected that the automobile industry will successfully beat out the manufacture of clothing and will rank next to the steel industry. In the United States where the automobile industry occupied a position of practical obscurity in 1898, there are to-day 7,600,000 motor vehicles and their number is expected to exceed 15,000,000 in the next ten years. It is no wonder to imagine that this American Industry has succeeded in capturing the markets of the world.

The motor car which was two decades ago noisy and defective has become to-day a

powerful, quiet and easy-going machine of remarkable efficiency, while attempts are still being made to build cars of the lowest cost and upkeep consistent with a maximum of life. The Motor car is regarded less as an item of luxury and extravagance and more as a business necessity and a source of economy. It has become indispensable to a professional man, like a doctor or a salesman as it affords greater possibilities of seeing more prospective customers in the course of the day. In fact, it is regarded as a gilt-edged investment. Apart from the business point of view, its utility has enhanced owing to the important part it plays in the advancement of health, pleasure, comfort and social life. The modern clubs owe their existence and increasing popularity to the conveniences afforded by the automobile. Instances are

common now-a-days where the entire families are bundled into a motor car for taking a holiday trip. In short, the automobile has contributed infinitely to the advancement of modern civilization, prosperity and comforts of the world

The first commercial vehicles were made in 1908 by a Cleveland Company in the U S A. Now, owing to the inability of the European manufacturers in producing enough cars, Europe, South America and the Orient have placed large orders with the U S A manufacturers. In the year before entering the war, America produced 1,900,000 motor vehicles, Great Britain 40,000, and France 50,000 cars. As a surprise to the whole world, America expects to produce 2,700,000 cars in 1920. New York has 600,000 cars or one car to 18 persons while Great Britain has one car to 80 inhabitants. Such being the success of the motor vehicle throughout the world the Youth of India has been kept back in the field of mechanical science and rendered blind for generations to come.

INDUSTRIAL PROSPERITY

It has been reported that, owing to a strike of the steam service men of Sheffield 30,000 steel workers were kept idle and the steel industry lost £ 500,000 for the first ten days of June 1920. At the close of this month the employees of the "Times of India" Bombay struck work. What does all this mean? Large quantities of food and raw material are constantly exported from India to Europe and other countries as the deficiencies in the foreign markets caused by the war are being filled up while the Indian market has become dependent on the supply of foreign manufactured goods. Owing to the severe neglect in the past on the part of the people and the State in the matter of industrial development, India offers to the foreign nations greater opportunities than ever before and their industrial prosperity is assured for

many decades to come. Their industrial predominance has enabled them to capture the foreign markets and to quote prices in advance with a view to secure forward contracts. In view of the Labour demands, the manufacturers abroad and the local retailers in their turn are quoting higher prices which are affecting Indian consumers adversely. Thus, there is an immediate danger ahead of the people. If this danger is to be averted, Indians as a community must realise the economic necessity of each man and woman contributing his or her share to the industrial progress of the country by manufacturing the necessaries of the country and helping the export of raw material in a finished form.

BANKING IN INDIA

Our esteemed contemporary, the Daily Telegraph, London, writes thus — The inadequacy of banking facilities in India provides the theme for an article in "Commerce and Industries," a monthly journal published in Madras. It is pointed out that while the United States, with a population of ninety millions, has over 28,000 banking offices, and the United Kingdom, with a population of forty-six millions, has 9,300, India, with a population of 315 millions, has but 359 banking offices. Moreover, Canada, with not a quarter of the population of India, has ten times the number of banking offices. One natural result of this inadequacy of banking facilities is that a great deal of capital is hoarded. For the great majority of agriculturists in particular banking facilities practically do not exist. Their savings are kept in the form of gold or silver sovereigns. The co-operative credit movement in India is still in its infancy, but it is gradually preparing the ground for the extension of banking in rural areas. For industrial development banks of a special character, which can give long-period loans, are needed. The Tata Industrial

Bank, which was established recently, supplied a long-felt want, but there is room for a large number of banks of a similar character. The Indian Industrial Commission recommended that an expert committee should be appointed to formulate a scheme for financing industrial concerns and to decide the responsibility of the State in the matter. The failures of the small Swadeshi banks in 1913-14 were in most cases due to inexperience and lack of trained staff. The Industrial Commission's Report points out that "there is in India at present a lack of trained employees, owing to the absence in the past of facilities for commercial education and of a regular system of training Indians in banking work."

POVERTY IN INDIA AND THE MASSES

Before the war there was considerable talk about the poverty of the people in India and there was almost invariably a reference to it made by almost every speaker on the platform and in the Legislative Councils in India. In short almost every budget speech contained a reference to the conditions of poverty in the country. The situation during and after the war was not improved but has become more and more acute. It could not possibly receive the adequate consideration of the leading Indian public thinkers and workers whose attention has been detracted by the political agitation for the Reforms to obtain democratic control over the administration of the country. Such a control, if really and wisely exercised, will go a great way towards mitigating the growing poverty of the land. In order to achieve successful results for the progress of the country, there is yet considerable need for systematic and organised work among the public workers in India who should work with a genuine motive to serve the true interests of the people with less of personal ambition and more with a sense of real duty to the country which they are pledged

They have yet to concentrate their active attention more wisely on questions of broad principle with an unbiassed mind and treat public affairs as distinct from personal or private matters. The Reform Act has enlarged the electorates and the Legislative Councils. The prosperity or the suffering of the people will depend on whether they exercise their right wisely to return competent men to the Council or blindly vote for any ignorant and incompetent person who will succeed in influencing them. Time has come when the best and ablest men with unselfish and impartial views are required in the Councils who can raise the economic condition of the country and bring credit to the nation by mitigating poverty. It must at the same time be recognised that there is a greater need than ever before for institutions and opportunities for imparting that education and training which are so essential for the people and their leaders alike to achieve real success in the fields in which they are working.

When India is getting poorer and poorer day by day, when prices are rising with lightning speed without corresponding increase in the earning power of the people, when the majority of the people are ignorant, and uneducated, groaning under poverty and distress of some kind or other without external help, when the war has made a handful of men abnormally rich and the rest poorer than before, and when India is not able to produce enough to meet the requirements of the people even if the exports are restricted while the manufacturing industries have just begun to start, no amount of inflated rupees, notes and gold Sovereigns will help the people. We are told that "our rupees will not buy even half as much food or cloth as they bought before the war." There is but one remedy. It is nothing but self-help. People must cultivate more food grains and manufacture more things for their

necessaries. In short, they must combine and organise to double and triple the production.

NEW FIELDS FOR BUSINESSMEN

It is stated that a party of 20 manufacturers and businessmen will leave England on July 7th on a tour in Western Canada with the object of investigating the best methods of extending trade between Great Britain and the Dominions. The Dominions possess tremendous undeveloped resources while the people of the land are not educated with the result that American investors are attracted towards them. As for Canada, there are very good openings for woollen factories. The increasing congestion of the Railways which has become chronic has the effect of stimulating the private enterprise to revolutionise the inland transport on an economic basis. Motor transport schemes promoted by business men and working on a co-operative basis by which the lorries will have full loads both "out and home" again are becoming more and more successful. Australia, China, India and other countries are importing American Motor cars and to keep up this business American firms are establishing depots for the supply of spare parts and accessories. In India, it is said that there is a considerable demand for cement owing to the great number of irrigation and harbour construction and building schemes projected here. And, there is great demand for wire rope in South Africa.

CHANGING INDIA

The tremendous changes that are taking place abroad all over the world have reacted on the political, social and economic life of India. The machine-made goods produced on a wonderful scale with the aid of the modern mechanical appliances have successfully killed the cottage industries, the hand woven cloth, and the thousand and one handicrafts for which the

country became so famous beyond the seas for years in the past. Owing to the arrival of the Motor-cars and motor-lorries not in hundreds but in thousands, chiefly from America, which have captured the rich market of India, the bullock carts which have been in use for centuries have disappeared. Goods and luggage hitherto carried on the heads of sweating coolies are transported by means of motor-lorry which has become the most efficient means of transport of the world in modern times. When in 1909 John Morley openly expressed that the introduction of Parliamentary Institutions into India was not contemplated, the year 1919 has witnessed the Reform Act granting responsible government to India whereby Ministers are to be chosen from the representative assemblies and the will of the Legislative Assemblies is to be mandatory, subject to the veto of the Governor. The Municipal Councils and District Boards are enlarged and controlled by the people without official control as before. The electoral rolls, formerly containing a few hundred voters, are expanded by running into millions. Old houses and buildings are being demolished, new ones being constructed on modern lines based on up-to-date sanitary principles. Fabulous prices are being paid for lands which were formerly lying waste, and every inch of which is valued in gold. Towns and cities are being overcrowded owing to the in-rush of population from the distant villages which have lost all their attraction as the people, deprived of their self-supporting cottage industries, are unable to make both ends meet under the changed economic conditions and high prices. City extension and town-planning schemes are engaging the attention of the Government. The housing problem with the rapid increase in rents has been getting more acute. Calcutta and Bombay which are as noisy and crowded as London have become infinitely more expensive. Life in India as a whole is vastly changed. In spite of the world unrest, the market is controlled by foreign goods. The people having realised their position, are making voyages to foreign lands to study the world conditions and to face boldly the competition in the world trade and industry.

REVIEWS.

THE INDORE STATE

THE Report of the Commerce & Industry Department of the Holkar State for the three years ending September 1919 has been issued by the Minister, Rao Bahadur Sardar M V Kibe, Esquire, M A M R A S He assumed charge of the Department in September 1916 Till then, no progress worth the name was done and the Department existed only in name He began the work in right earnest and prepared and published a minute on the aims and objects of the Industries Department together with several suggestions for the development of industries

Prior to 1916, several investigations on the industrial possibilities of the State were made in Lac, pencil, cement Iron, paper and chemical industries but no practical results have been achieved During the period under review, considerable progress has been made in making enquiries and carrying out experiments and investigations in the development of Oil and Soap industries Glass making, Blanket weaving, Paper Mill, Pottery and Leather industries, the starting of a State Bank, Railway projects and Hydro-Electric schemes Active efforts are being made for the starting of Swadeshi Stores, and the abolition of Customs duties levied by the Government of India on the goods imported from foreign countries into Indore State In the work of organising the paper industry, good progress has been made A sum of Rs 70,000 was placed at the disposal of the Department for machinery and buildings which are ready for working

There are 4 cotton spinning and weaving Mills in the Indore City and they are working satisfactorily There is a Model Brush factory working with a capital of Rs 1,25,000 It contains the latest automatic machinery driven by electricity There are the Tiles factory making high class bricks and Tiles, the Button Factory, which is a successful enterprise, the Thymol Factory, Iron and brass foundry, Hosiery factory, Ginning factories and numerous other industries. Proposals are made to start a Starch Manufacturing Factory at Barwaha with a capital of 15 lakhs, a Glass Factory, Tannery and other industries. Loans are granted by the State to several industrial

concerns repayable after a certain period. Prof Stanley Jevons and Mr Gibbs were engaged to give expert advice on certain matters. The information collected by the Department has been published in the form of bulletins. The Indore State Railways, the cottage industries Industrial Schools, Electro-Hydrolic schemes and other projects are engaging the attention of the Department We heartily congratulate the Government of His Highness the Maharajah Holkar for the magnanimous spirit with which the industries are developed with a view to promote the real prosperity of the people and the State The Minister in-charge of the Department has shown substantial progress by laying the foundations of the industrial development on a firm basis He has worked out several new schemes which are the sources of new income to the State The people of the State owe a debt of gratitude to the Minister for the excellent progress he has made and to His Highness for the very forward policy and the gracious support in sanctioning the schemes and the proposals of the Department

Ourselves

"Messrs Narasimham & Co, Limited, has been registered with a capital of Rs 1,00,000 divided into 1,000 shares of Rs 100 each. The registered office is at No 5 Mount Road, Madras This Company having already commenced its business, will take over the business of "Commerce and Industries" as a going concern from the next issue The one object of the Company among others, is printing and publishing. The shareholders are among the Subscribers who are our friends and well-wishers of the country As soon as practicable, the business of printing will be undertaken As the year closes with this number and the Directors of the new Company will take over the management, we feel it a pleasant duty to offer our grateful thanks to our numerous friends, Subscribers, Advertisers and Contributors for the kind encouragement shown us in spite of the short-comings, and for the numberless letters of appreciation from gentlemen like Sir M. Viswaswarayya and Mr. Findlay Shirras. In spite of our best attempts, the appearance of this issue has been

delayed for which we regret. Our readers are aware of the difficulties with which the Publishers are confronted, especially when they are dependant on others for printing. Our thanks are due to our printers, the Commercial Press, Triplicane, for the attention they have bestowed in spite of the enormous pressure of work. In conclusion, we thank most cordially our constituents once again for their kindly co-operation and trust that they will do all they can to enable us to successfully carry on our sacred mission to our mother land.

The Sydenham College Graduates' Association, Bombay

We have before us the first Annual Report of this Association for the year 1918-19. The Hon. Sir Ibrahim Rahimtoola Kt. C. I. E., is the President, and Principal, Percy Anstey, B. Sc., is its Vice President. Mr. G. K. Chitale, B. Com., who was one of the active founders of the Association in 1917 is the Hon. Secretary. The Association whose motto is "United we stand" aims at the promotion of social intercourse and mutual co-operation and safe-guarding the interests of the members by holding lectures and debates and organising the Employment Bureau. The Report presents a very interesting record of the activities of the Association. Mr. M. Subedar delivered the opening lecture on the "Economic Fallacies". The second lecture was delivered by Prof. V. G. Kale of the Ferguson College on the "Financial Aspects of the Montford Reforms". A paper on the "Bombay Textile Industry" was read by Mr. Deshpande. A very interesting and suggestive lecture on the "Indian Labour Problems" was delivered by Mr. G. K. Doshi of the "Servants of India Society" who had first hand opportunity of studying the social conditions and labour problems in England.

The Employment Bureau has done satisfactory work by securing to the members good prospects and remunerative employments in some of the big concerns throughout India.

The progress of the Association achieved in the first year of its existence may be said to be very satisfactory. Prof. Anstey is very well-known, both in the students world and outside, as a sympathetic and popular Principal. The members owe him a deep debt of gratitude for all that he has done to promote

their interests and well-being. The fact that the Bachelors of Commerce are not allowed to go in for the degree in Law of the Bombay University cannot be treated as a real grievance. It might be that some of the Graduates in Commerce have failed to get suitable jobs. It is wrong in principle to allow a B. Com. to qualify himself as a Lawyer by appearing for the LL. B. Examination. It is an admitted fact that the legal profession is overcrowded while the openings in the commercial line are daily on the increase. The fact that a B. Com. could not get a suitable job is a proof positive that he did not exert his best to obtain one for himself. There is a crying need for more Colleges of Commerce throughout India to promote the economic progress of the country. Every Indian who realises his duty to his country and to his conscience should give up law in preference to a commercial career. Those who have obtained Degrees in Commerce make a mistake in thinking that they have learnt everything. They have studied the mere rudiments of the subject for the purpose of passing the examination and have everything to learn in the School of practical experience by starting their careers in Commercial concerns. The promotion of the material and economic well-being of their own country should be their ideal. We draw their attention to the words of their learned President, the Hon'ble Sir Ibrahim Rahimtoola. "What they wanted in India was that they should depend on their own soil for their requirements both as regarded their food-stuffs and their manufactured articles. They knew that India is very backward in its manufactures. While it exported a huge quantity of raw materials, it imported an overwhelmingly large quantity of manufactured articles." If the education and training imparted in the College did not enable them to work successfully in the field of Commerce and Industry, the fault is not theirs. It shows that the College has not yet reached the highest level of efficiency and the sooner the defects are remedied the better. When Europeans and Indians are promoting new Industries, it is the duty of our young men to gird up their loins and put forth their best efforts for the economic development of their mother country. In short, we wish success to the Association.

MILL-GEARING WORKS, LIMITED, CALCUTTA

This Company, whose prospectus appears elsewhere, has been registered with a capital of Rs 2,50,000 divided into 20,000 ordinary shares of Rs. 10 each payable Rs 5 on application and the balance on allotment, and 500 7½ per cent preference shares of Rs 100 each. Of these, only 4,955 Ordinary shares are issued to the public for subscription at par. The Managing Agents are Messrs N K Sarkar Engineers, 10 Strand Road, Calcutta. They have secured the services of Mr J Mc Donald, a practical moulder and pattern-maker of special experience in the United Kingdom. The firm manufactures lathes, shaftings and other mill requirements and rainwater pipes of high quality by taking over as a going concern the existing business of Millgearing Works at Howrah which has supplied lathes to Government and Messrs Martin and Co Stuart and Co, and Alf Herbert Ltd India requires the development of her manufacturing industries like the one taken up by this firm for which there is a great demand and it is hoped that this firm will have a bright and

successful career. Prospectus and application forms can be had of the Managing Agents.

The Technical Review

This is a Review and Digest of the Technical Press of all the countries and a survey of the Engineering Industry throughout the world. It is published at No 2, Central Buildings, Westminster, London, S W and the number before us contains important notes on Engineering construction, Factory construction and lay out, Municipal Engineering, Transportation, Military Engineering, Mechanical Engineering, Machines, Tools and Workshop processes, ship-building and Marine Engineering and other branches connected with Chemistry, Electricity, Mining and Metals, Aeronautics, and Automobiles. It supplies useful information to technical men in all branches of Engineering.

The Star Trading Association Bangalore, City

This firm has sent us a copy of their perpetual wall Calendar which has been very attractively printed with bold letters and serves a very useful purpose in every Office.

THE WORLD MARKET.

Industrial Machinery A firm in Madras is desirous of entering into communication with and receiving catalogues and advertisements from, manufacturers of machinery required for the following industries —

Card-board	Soap
Paper	Pottery
Wool pulping	Sugar
Furniture and woodwork	Dyeing
Buttons	Oil extraction
Matches	

Please correspond with Box No 1 care of "Commerce and Industries," Post Box 353 Mount Road, Madras, S C

Paper, writing and printing A firm in Madras would like to receive samples and quotations for importing writing and printing paper of sorts. Please correspond with Box No 2 care of "Commerce and Industries" Post Box 353, Mount Road, Madras S C

Representatives Wanted A firm in Madras is desirous of entering into communication with the object of establishing agencies in all the principal trade centres of India and foreign countries. The business is likely to prove very lucrative. Please address Box No 3 care of "Commerce and Industries," Post Box 353, Mount Road, Madras S C.

Agencies wanted A firm of Publishers in Madras wants Agents in the important towns and cities in India to work as representatives on very good terms. For particulars please write to Box No 3, care of "Commerce and Industries," Post Box 353 Mount Road Madras, S C

German Dye Stuffs A firm of ink manufacturers wants to receive samples and quotations of Dye Stuffs. Please Address, Box No 4, care of "Commerce and Industries" Post Box 353, Mount Road, Madras S C

Stationery and Allied Lines A firm of Merchants in Madras desires to get into touch with United Kingdom Manufacturers and suppliers of Stationery and allied lines with a view to undertake their representation. Please correspond with Box No 5, care of "Commerce and Industries," Post Box 353, Madras, S C.

Agents for Tea Wanted A firm of Tea dealers wants agents in all important trade centres to push on the sales. Address Box No 6 care of "Commerce and Industries" Post Box No 353, Madras, S C

Spinning Machines Owing to the great demand for spinning and weaving machines for cotton, flax, hemp &c, to work by means of hand-power in cottage industries, firms of manufacturers are requested to send their specifications and price lists and to kindly correspond with Box No 7, care of "Commerce and Industries," Post Box No 353, Madras, S C

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SHORTER HOURS OF WORK

By Mr K S Abhyankar, B A

The Attitude of Government

AS an original member of the League of Nations, India was invited to send delegates to the International Labour Conference at Washington. The conference discussed, among others, the question relating to the maximum hours of work in industrial concerns. A draft convention drawn up at the Peace conference, based chiefly on the recommendations of Lord Simon and His Highness the Maharajah of Bikanir, specifically recognised that the conditions of labour in India were different from those prevailing in most of the Western countries. The Washington Conference, the delegates, while recommending generally an eight hours' day or forty-eight hours' week for the Western countries, recommended a ten hours' day or a sixty hours' week for countries such as India. The Government of India, while apprehensive that any attempt to bring Indian labour conditions into line with those of Western countries by violent legislative changes would be disastrous to employer and employed alike, authorized their delegates at the conference to consent to the principle of a sixty hours' week for factories and mines, subject to certain exceptions. Mr. N. M. Joshi, who was nominated by the Indian government to represent Indian labour at the conference, while personally favouring an eight hours day, did not press for it, as he saw no chance of its being acceptable, either to the Indian Government or to the Indian capitalists or even to the Indian public in general, who are jealous of the competition of foreign countries. The Government of India have now addressed a communication to the local Governments calling for their opinions on this and on cognate questions discussed at the Washington Conference, before the end of July next. It is more than a year, however, since the

Government of India first referred this question to the Provincial Governments, as arising out of the recommendations of the Indian Industrial Commission. Though all these local governments have not yet sent their replies, the majority of those who have done so favour a sixty hours week and we may expect that the Indian Factories Act will be soon amended, so as to establish a maximum of ten hours work per day.

Attitude of Indian Labour and Capital

There was a time when labourers in Bombay factories had to toil for fourteen hours a day and for all day of the month. Through the efforts of the late Mr. J. J. Khande, they got four holiday in a month and later on the late Dr. Nanavati decided giving them a twelve hours day. When the Bombay Mill Owners Association were requested by the Government to give their opinion on the question of the hours of work arising out of the recommendations of the Industrial Commission they admitted that twelve hours of work were 'too long for sufficiently close application' and a shorter working day will have a good effect on the general health of the workmen and to a certain extent be likely to improve their output. They, however, expressed the apprehension of Japanese competition. This was before the meeting of the Washington Conference last February, as a result of the strike of the mill hands, a ten hours day was agreed upon. The Bombay Mill Owners' Association have now approached Government with a request to amend the Factory Act so as to make a maximum ten hours day for textile factories for the whole country. The last Conference of the Bombay mill hands which met in December 1919, had, however, asked for a nine hours day, apparently as a compromise.

The Loitering Tendency of the Indian Workman

Some employers are afraid that the proposed reduction of the hours of work will mean a reduction in output. They complain of the loitering tendency of the Indian workman. Mr. D. M. Wadia, for example, says "It is not too much to say that a man supposed to work 12 hours in a factory is not actually employed for more than half that time. Dawdling is ingrained in the habits of the people, and a good part of the day the factory hand lounges about the compound, chatting and smoking bidis." The Committee of the Bengal Chamber of Commerce in deprecating any tinkering with the hours of work in Indian industries, urged that the Indian labourer prefers a leisurely manner of doing his day's toil to a more exacting if shorter day. His Excellency the Viceroy complained of the inability of Indian labour to concentrate effort over a shorter working period. Witnesses before the Industrial Commission made the same complaint. One or two prominent factory owners stated that the operatives did not actually work for more than 8 hours out of the 12 at present permitted by the factory law, and some witnesses said that even if the hours of work were reduced workmen would still waste so much time as seriously to reduce the present rate of production. The Commission, therefore, did not make any definite recommendation as regards the hours of employment but left the question open for further examination.

The Cause and the Cure.

As acknowledged by the Bombay Mill Owners' Association, this loitering tendency is due partly to excessive hours of work, and the remedy lies in reducing the hours and giving the workman more time for rest, repose and recreation. The housing conditions in industrial cities, the want of any inclination

for healthy recreation as a result of fagging brought on by overwork, the insanitary conditions of work in factories, the drinking habit which is also a result of fagging, and the low standard of life, all these are responsible for the lack of energy of the workman. To make him more efficient, his conditions of work must be improved. These wretched conditions are also to a great extent responsible for the migratory habits of the Indian workman. "Good housing and shorter hours" said Mr. N. N. Wadia at the Bombay Mill Owners' Association "will enable us to build up a permanent class of labour in Bombay and throughout India from which our operatives can be locally recruited." In other countries, as the Industrial Commission point out, shorter factory hours have exercised an important effect in the direction of improving the standard of living of factory hands, why should not the same effect follow from the same cause in this country? Another advantage of shorter hours pointed out by the Commission is that they help in diminishing the congestion of labourers' dwellings, by giving time for employees to come in from areas situated at a little distance from their work. The *Statesman* once raised the question whether the workman's lack of energy might not be due to the insidious hookworm disease. The paper apparently has the Bengalee workman in mind. Its surmise may not be true to the extent it supposes, but what is to be noted is that the paper looks for the cause to the physical surroundings of the workman and not to any incurable stupid dawdling tendency on his part. The Burmese Oil Company tried the experiment of reducing the hours of work, and it proved successful. Last year they reduced the working hours at the Syrian refineries from eleven and a half (including the hour and a half allowed for meals) to ten hours (includ-

ding two hours for meals) It is reported that this has resulted in a decided improvement in the quality of the work and in a greater contentment among the workers.

The Wear-and-Tear of the Workman

The proper reduction of working hours does not in the long run mean a reduction of output. The General Federation of Labour, has summarized the demands of the working people in the formula, "Maximum production in minimum time for maximum wages." It thus recognizes the truth that shorter hours must not be accompanied by a reduction in output. The formula of the Federation means nothing but maximum *efficiency* but in appraising efficiency we must take into consideration not only what Marshall calls the earnings of a human being counted *gross* but must make special reckoning for his wear and tear. Thus even if a temporary material loss takes place, an increase in efficiency will follow as soon as the standard of life of the workman is raised, and since material wealth exists for the sake of man and not man for the sake of material wealth, the replacement of inefficient and stunted human lives by more efficient and fuller lives would be a gain of a higher order than any temporary material loss that might have been occasioned on the way. (Marshall) Lord Leverhulme of Lever Brothers, Port Sunlight, advocates a six-hours day, for, says he under the present arrangements the cumulative evil effect of fatigue lowers efficiency owing to ill health and lassitude and lack of willing efforts, it is also cruel to expect a tired man to attend a night school to receive general and technical education, whereas Lord Leverhulme expects and has experienced that with a six hours day, the health and cheerfulness of the workmen react favourably on the out-turn per head, the workmen have more leisure for general and technical education and this in turn tells favourably on the

quality of the work done. We in India must note, that this assumes that there are adequate facilities for employing the leisure hours advantageously. The employers and social service workers in this country must provide more such facilities now, when we have shorter hours in factories. The Industrial Commission also point out that until the workmen have learned how to use a longer period of leisure more advantageously, shorter hours may not be an unmixed benefit.

The Shift-system

One advantage of shorter hours is that they allow machinery to be worked for a longer time with a double shift for the workmen. In these days when machinery gets out of date in a few years, it is not economy to keep it idle during, say, twelve hours every day. With an eight hours day and with a double shift it can be worked for sixteen hours. Moreover, machinery that cannot be profitably introduced for a ten or a twelve hours day can at times be introduced for a sixteen hours day. In limiting the hours of work, the Government of India, do not propose to limit the time during which plant and machinery may be kept going. The Shift System can, however, be introduced only gradually, because in the first place, an adequate supply of trained labourers for the second shift would not be forth-coming, and even if it were forth coming there is no housing accommodation for it in cities like Bombay. In the Tata Iron and Steel Works at Jamshedpur, for example, the plant and machinery is kept going on for twenty four hours with three shifts of eight hours each. It is, however, reported that owing probably to lack of an adequate supply of trained labourers, the workmen there have many times to work for sixteen hours and occasionally even for twenty-four hours at a stretch, in the absence of any of their number owing to illness or some other cause.

Political Importance of Labour Reform

In the pages of the *Commonweal* a protest was made against the discrimination made at the International Labour Conference. Facts, however, cannot be altered, however much we may wish them to be otherwise. The change in the working hours must be made by steps. If we take into consideration, the present habits of the workman as a result of the wretched conditions of his life in industrial cities, the absence of adequate facilities for healthy recreation and general and technical education for the workman, is also the competition of foreign countries, most thinking people in the country will accept a ten hours day as a *transitional measure*. We agree with the *Commonweal*, however, when it says that the conditions of Indian labour must be brought into line with those which are about to prevail in other parts of the world if only for one reason pointed out by His Excellency the Viceroy when he said, 'there

is a quickening consciousness throughout the country generally that the existing state of affairs is unsatisfactory and *unworthy of India's political aspirations*." His Excellency added "We believe that there is now a prospect of progress more rapid, more radical and more substantial than could have been imagined some few years ago." An instance of how industrial backwardness is incompatible with political aspirations, was given the other day by Mr. N. M. Joshi. In the committee of the International Conference, the delegates from South Africa, while accepting a general eight hours-day, asked for a ten hours day in the case of Indian workmen in their country, as India 'itself' was to have a ten hours day. Though the motion was not brought in the conference itself is Mr. Joshi opposed in the committee on the principle of racial discrimination he had to admit that the demand cannot be characterized as wholly unjust.

SUN DRIED VEGETABLES

By Rao Saheb G. N. Sahasrabudhe

SUN dried vegetables—which are prepared at the Fruit Experiment Station, Quetta, is a new discovery and they are now offered for sale to the public. This product has been prepared by Mrs. Howard at Quetta for use in localities where fresh vegetables cannot be obtained.

But it seems that the invention was the result of war necessities in America.

The Scientific American says —

Fostered by large Government contracts there is developing in this country a new industry that will be of material benefit to our economic life. This industry is called "Dehydration" or "drying of vegetables." By subjecting fresh vegetables to the action of circulating currents of warmth—the dry air—the moisture contained is exhausted

with the result the weight and bulk of the product is greatly reduced and the vegetable is made non-perishable and can be kept indefinitely. The cell structure and flavour is not injured by the drying process, soaked in water for a few hours dehydrated product is restored to its original colour, bulk and food qualities and when cooked it has the flavour and appearance of the fresh article.

At the entrance of the country into the war and when our soldiers began going abroad in large numbers, the War Department was confronted with the task of supplying enormous quantities of food to maintain the United States Army in France, at a time when the demands upon the World-Shipping were the most pressing in the history of the world. To

solve the food problems the various departments of the Government co-operated, and exhaustive tests were made of the different kinds of food available for export. The advisability of using dried-vegetables was suggested and a hearing on the subject was had in a sub Committee appointed for the purpose. Representatives of Commercial Companies engaged in dehydrating vegetables were also heard. Samples of dried vegetables were exhibited and distributed throughout Washington, to be tested for flavour and food values. The Restaurants in the Capital and Railway Trains served various dehydrated stocks supplied from the Californian plants, and the people were astonished at the similarity to the fresh. As a result Millions of pounds of dried potatoes, carrots, turnips and other varieties have already been supplied to our armies abroad and a steady stream of new form of food, speeds across the country and the Atlantic to satisfy the appetites of our boys and armies over there.

The expansion of this industry offers tremendous opportunities to this country and even to India. With a large Commercial plant or Community plant in each

locality, a new market will be offered to vegetable growers. Thousands of acres of waste lands in the outskirts of cities, towns and villages can be utilised for the growing of vegetables and the spaces between fruit trees in orchards can be used for the same purpose. Surplus market stocks can be taken to a near by drying plant and saved as is done in England. Germany had enormous organisation for the purpose. Here dehydrated vegetables have doubtless been one of the reasons why she has been able to withstand the food blockade of the Allies. England, Italy and France are also large users of dried-vegetables.

The possibility of the new industry has been fully demonstrated and there is a wide field for Industrialists in India to utilise the waste lands and surplus products of vegetables.

The following kinds of vegetables are available for sale at the firm of Messrs Milne and Co., Bruce Road, Quetta or at the Army and Navy Co-operative Society Ltd., Calcutta.

Potatoes, Carrots, Turnips, Onions, Tomatoes, Shimoch Cabbage and Brinjals.

Samples are shown in the Exhibition Hall.

THE FUTURE OF CHEMICAL AND ALLIED INDUSTRIES IN INDIA

By Mr L. A. Adwani

THERE is a wide field for development in this line, and the future industrial activities of the country, will greatly depend upon the establishment of a chemical industry, which is necessary for the supply of materials, that form the basis of other industries, amongst the most important of which may be mentioned textile industries, the manufacture of artificial fertilizers, etc., etc.

Under the heading of "Chemical and Allied Industries" may be included, the manufacture of Aluminium, Cement, Glass, and Soap besides the chemical industries proper, the latter are chiefly connected with the manufacture of Alkalies, Acids and various other organic substances, such as coal-tar dyes etc.

The following statistics show the importance and urgent necessity of establishing chemical industries

Imports of Chemical and Allied Products

Name	Year	Value	Tonnage
Nitric Acid	1912-13	1,16,250	256
Sulphuric Acid	1911-12	5,49,100	3,295
Other sorts of Acids	1911-12	46,740	41
Aluminous Sulphate (including Alum)	1912-13	4,67,100	104
Ammonium Salts	1912-13	3,11,445	80
Bleaching Materials	1913-14	4,35,000	1,240
Carbon Carbons	1911-12	21,170	1,111
Copperas (iron sulphate)	1912-13	5,17,100	1,103
Cyanide of Potash	1912-13	1,15,000	293
Bicarbonate of Soda	1915-16	6,84,170	6,014
Soda Ash	1911-12	1,72,600	4,000
Sulphur	1911-12	3,11,700	3,609
Other Acids	1911-12	41,14,200	1,100
Aluminium Metal	1912-13	2,11,305	1,091
Soap	1914-15	3,11,000	20,140
Cement	1912-13	6,12,10,160	114
Coal tar Dyes	1912-13	1,14,100	0
Glass	1913-14	1,11,200	0
Total Rs.		6,16,16,400	

The Alkali and Sulphuric Acid Industry

Generally together with alkalis are produced large quantities of important acids, which are essential for the preparation of coal tar dyes and form the basis of many important industries.

At present every ounce of alkali used in India is imported. It is therefore almost impossible to start an indigenous industry for the manufacture of goods, in whose composition alkalis enter, or in whose manufacture alkalis and acids are largely employed. How can any articles manufactured under the above circumstances be honestly expected to compete with the imported goods. In the manufacture of glass, soap, dyes and many other important industries of similar nature we must suffer from the same disadvantage.

The *Lablac* process, for the manufacture of alkalis, is the most suited to Indian conditions, but for the process either sulphur or iron pyrites must be had in large quantities. Unfortunately, India does not possess extensive deposits of either of these minerals and where they do occur it is in such small

quantity as to be totally unsuited for this purpose.

One of these materials is also necessary for the manufacture of Sulphuric Acid, without which no chemical industry can be put on a firm footing.

At present some four thousand tons of sulphuric acid are being manufactured annually from imported sulphur. This gives to a great extent, the difficulty of transporting large quantities of such dangerous material as the acid happens to be. The price is still nevertheless very high and cannot at the best of times, be less than Rs. 150 per ton for ordinary chamber acid, which in England was sold before the war, for about thirty shillings a ton.

All the other raw materials required in the manufacture of alkalis can be had in India in abundance, and at a cost that compares very favourably with that of European countries.

Although no deposits of pyrites or sulphur exist, there is an unlimited supply of Gypsum, a mineral hydrated sulphate of lime, containing about 18% of sulphur. It may be possible to recover this sulphur for use in the manufacture of alkalis and sulphuric acid. This gypsum can be had in some parts of India for Rs. 8 per ton and should it be possible to recover its sulphur contents then the problem of establishing a profitable chemical industry to deal with all the requirements of the country will be solved.

Potash Salts

Potash salts are now extensively used in Europe and America as fertilizers and might be employed with advantage in some cases in India.

A small occurrence of potash salts has been recorded at the Mayo mines, in the Salt Range of Punjab, but these do not seem, of any extent or of any commercial importance.

During the war many experiments were made in America and England on the extraction of Potash from Potash Feldspars. These are found in many parts of India in very large quantities and may possibly serve as a valuable source both of Potash and Alumina.

Dyes

The manufacture of coal-tar dyes, is a highly specialised and very complicated industry. It is very doubtful whether it would be successful at present even if the necessary acids and supply of all dyes, were available at a reasonable rate. The coal tar which is the principal raw material and forms the basis of the whole industry, is not available in India in the large quantities required. In order to obtain the necessary quantity of tar very extensive by-product coke ovens would have to be installed in the colliery districts of Bengal, which could only be done at considerable length of time and great expense. Taking all these into consideration the prospect of the establishment of a coal-tar dye industry in India does not seem at all hopeful.

Glass

Several glass factories have been started in India of late years, the most important of which are those at Jhagadia, Naini, Jubbulpore and Umbala.

In the manufacture of glass a very large quantity of soda and potash salts and other chemicals, are required and which at present as already stated are all imported, costing the

glass works much more than for what they may be obtained in Europe.

None of the glass works seem to have obtained the results which were anticipated and this must be due to a great extent to the high cost of alkalis. If alkalis could be obtained in the country at the same rate at which they can be had in Europe there seems no reason why glass works in India should not be successful and paying propositions.

Soap

India grows enormous quantities of various oil seed such as cotton seed, linseed and etc.

It has been estimated that some 5 to 7 million pounds sterling worth of oil seed is annually wasted owing to want of proper means of treatment and utilisation in the country.

Now the exports of soap amount to nearly a crore of rupees, all of which might be produced in the country from cotton seed which is at present wasted in large quantities.

In the manufacture of soap large quantities of glycerine might be obtained as a valuable by-product for export and which to a great extent would cover the cost of manufacture. The oil cake also is to be taken into consideration which would provide a very valuable manure and cattle food.

Many soap works, it is true, have been started but the matter has not yet been taken seriously in hand on large scale.

THE ALUMINIUM INDUSTRY

THE principal raw material or ore of aluminium now used *viz.* Bauxite, occurs in vast quantities in the Central Provinces and to a lesser extent, in many parts of India. The largest and richest Bauxite deposits of the Central Provinces are in Balaghat and Jubbulpore districts, those of the Jubbulpore

district being the richest and most readily worked, as they are mostly within a few hundred yards of the railway line, while those of Balaghat although containing a much larger quantity of ore are not so readily workable, the nearest deposits being about fourteen miles from the railway.

Bauxite is a hydrated oxide of alumina, containing a certain amount of impurities, such as iron oxide, silica and titanium oxide. The average Indian Bauxite contains anything from 50-60 per cent of aluminium oxide, 20-30 per cent of water, 0.5-4 per cent of silica, 1-6 per cent of iron oxide, and 5-10 per cent of titanium oxide. Bauxite to be employed in the manufacture of aluminium should be as free as possible from silica, which is the case in the best Indian ore.

In the manufacture of aluminium metal, the first step is to obtain pure alumina from bauxite, which is accomplished by treating the latter with a solution of caustic soda; the pure alumina is then reduced, by means of carbon in an electric furnace, to the metal.

For every ton of aluminium produced per annum some 4 to 5 electric H P are required, therefore it is only possible to produce this metal where cheap electric power is available.

The present annual demand for aluminium in India is about 2,500 tons, all of which is imported, but taking into consideration the future needs for Government purposes, it will amount to at least 12,000 tons, in the course of the next five years. Many schemes are now in hand for developing hydro-electric power, in the Bombay Presidency. Should cheap power be obtained in large quantities, aluminium may be manufactured in the country, to meet all present and future requirements.

THE CEMENT INDUSTRY

AN industry has sprung up in the fabrication of Cement of late years at an extraordinary rate. Many attempts were made to start Cement Works in the country for the past thirty years or so, but it was not until the Katni Cement Works started in 1914 that any considerable success was obtained in this line.

Vast quantities of Cement are required for public works, buildings, and other similar constructions, such as railways, irrigation works etc., and as the raw materials required for the manufacture of Cement *viz.*, limestone, clay and coal can be had in abundance in almost every province, there is every hope of India being totally independent of all foreign supplies, in the course of the next few years.

The following figures show the present position of the Cement Industry and it will be seen that India is now producing roughly two-fifths of her present requirements.

Cement Imports

YEAR				
1911-12	1912-13	1913-14	1914-15	1915-16
TONS				
116,950	160,514	146,578	144,972	131,645
VALUE IN RUPEES				
34,96,665	68,67,170	65,83,965	67,33,980	70,55,150

Approximate Indian Production of Cement

Katni Cement Co. Ltd.	5,000 to 40,000 tons
Bundi Cement Co. Ltd.	0,000 tons
Indian Cement Co. Ltd.	20,000 tons

85,000 to 90,000 tons

Total say about	tons	90,000
Imported Cement (average of five years)	tons	140,000

Grand total 230,000 tons

The average value of Cement sold in India before the war was about Rs. 50 per ton.

The war has of course to a great extent retarded the importation of foreign Cement into the country or by now, India would be

consuming at least three hundred and fifty thousand to four hundred and fifty thousand tons a year, of a total value exceeding Rs 1,75,000 to 2,25,000. As the cost of manufacturing a ton of cement in India does not exceed Rs 25 it leaves a clear profit of at least thirty rupees per ton on the pre-war price.

The present year's balance sheet of the Katni Cement Co. Ltd., shows a gross profit of over rupees thirteen lacs, accruing from the manufacture and sale of about forty thousand tons of cement (which was sold for an average price of approximately sixty rupees per ton), at a profit of thirty five rupees

per ton. These figures bear out the statement that the manufacturing cost could not have been more than Rs 25 per ton, even at the present extraordinary high rates for coal and other raw materials.

The Cement turned out by the Katni Cement Co. Ltd., is quite as good in quality as the best imported Cement, and as there is abundance of raw material available in the country, there is no reason why India should not in the next few years be quite independent of all foreign supplies. So far Bombay financiers have taken up this important National Industry.

VILLAGE INDUSTRIES IN INDIA

By Mr V R Mundle

THE necessity for the establishment of Village Industries, on a small scale, and the economic advantages derived therefrom by the country at large, and the Villagers in particular are worth the consideration by all true lovers of the country—especially the enterprising Industrialist throughout India. The villagers are required to go to some town, where they could get the necessary articles, which are not obtainable in Villages. They have to pay high prices for the articles bought for them in Town. In order therefore to get rid of these troubles, and to improve the economic condition of the people, it will be to the advantage of the villagers, as well as the promoters, to start Village Industries to satisfy the ordinary requirements of the villages.

In the beginning Indian Capitalists naturally will not be induced to take up this work in view of the laborious task before them and the difficulties they have necessarily to meet on their way. But, they must be prepared to face boldly all such initial difficulties even

at some sacrifice for the noble cause of improving the lot of the villagers from an economic and industrial point of view. The Villagers naturally being helpless and ignorant in the matter of the development of their Industries and their economic effects, may not appreciate it from the outset, the idea of the introduction of Village Industries in certain localities.

Hence, the responsible duty of educating the ignorant masses devolves upon their patriotic well-wishers who take up the cause by holding informal Conferences explaining to them their existing situation how they can improve it by taking to Cottage Industries, and demonstrating the practical working of a few specific Industries. For the successful working of these Industries organisation on sound business lines is imperatively necessary.

In every Province, there ought to spring up a net work of Industrial Banks organised and controlled by Indian Capitalists whose object should be not merely the accumulation

of profits for themselves, but to anxiously watch and foster the development of the Cottage Industries of the country. The narrow-minded, greedy and selfish Capitalist will be satisfied with the multiplication of his capital at any cost by way of exploitation and exploitation, pure and simple, is his main object. Such a Capitalist will not help, in the least, the development of the indigenous Industries of the land, but will, on the other hand, mar and deter the progress of Industrial development by killing the indigenous industrial enterprise by all possible means. At present, to save the lot of the starving millions throughout the land who have been forced to begging and other objectionable means of earning livelihood owing to the neglect on the part of the leading rich and educated business classes who are supposed to guide the destinies of the "dumb and down-trodden", millions and in the absence of a sufficient number of honest, selfless and co-operative workers to guide them on the economic side of life, the Country demands the organisation of Industrial Banks having branches in every Village throughout India for the purpose of financing the cottage workers on equitable terms to enable them to buy the raw material required for their Industrial needs and to sell their finished products by opening suitable markets for same. If such Industrial Banks are manned by broad minded business men who love their country and its people truly, working anxiously for their economic regeneration with a sense of genuine patriotism, it is a double blessing, a blessing to such Industrial Banks as well as to the villagers. It will not only prove profitable to the Banks financing the Industries but also lead to the prosperity of the cottage workers.

The next point for consideration is what are the Village Industries requiring financial assistance? The most important of all the

industries requiring immediate attention is the handloom weaving industry. To improve this industry, each Village must be supplied with an Oil Engine with some gins to gin the Cotton, a few Yarn-making machines and Hand-looms. To manufacture coloured cloth, the promoters can introduce dyes extracted from vegetable materials. To utilise the power of the Oil Engine, allied industries can be started such as Oil Industry by which Oil can be extracted from vegetable matter such as copra and oil seeds, the Oil extracted being utilised for consumption in the villages, and the Oil cake used as cattle food. The surplus oil can be consumed for the manufacture of Soaps to be used by villagers to clean their cloths.

The Village Industrial Banks will act as Bankers of villagers' deposits, and also of the industrial concerns in the villages. The benefits from the village industries are that the villagers will not be required to seek the way of a Town, and they will get the articles required for their daily use much cheaper than the articles bought from a town.

Labour is the third item that demands the attention of the promoters of the village industries. In villages, the amount of labour can be obtained on duly wages. The village Labour is generally cheaper than that of the Industrial or ordinary Commercial Towns, but it is unskilled labour. They can be turned into skilled labourers in due time. For these small village industries, much labour will not be required.

With a view to obviate difficulties in controlling Industrial organisations and the branch Banks, the District Industrial Bank will open branches in suitable centres in each Taluk for a group of villages forming one unit.

Great attempts have been made by many persons to establish Co-operative Credit Societies in large Towns and Villages to enable the Farmers to raise loans, on sound

security to improve their fields and thereby to raise the economic condition of the Agriculturists

In the same manner, the true Industry-loving people should exert themselves, with the co-operation of Government, if required, to promote these useful District and Village Indus-

trial Banks, and the Village Industries for the benefit of the poor villagers, and the country at large, and remove the distress and poverty under which they are labouring. This aspect of Industrial organisation should not be lost sight of by Indian Capitalists and promoters in these days of growing business enterprise

COMPANY MEETINGS.

The United India Life Assurance Co. Ltd.

THE 14th Annual General Meeting of the above Company was held at the office premises, Explanade, Madras, on the 29th May last when the Report of the Directors for the year 1919 was presented to the shareholders. The holding of the General Meeting this year appears to have been unusually delayed.

The Report of the Directors shows that substantial progress has been made. During the year under review, 743 Proposals were made to the Company for assuring sums amounting to Rs. 12,48,000 as against 497 Proposals for Rs. 8,12,750 in the previous year. Of this number, 572 have resulted in Policies for Rs. 9,00,250 and the remainder have either been declined or withdrawn or are awaiting completion. The annual premiums on the policies effected during the year amounted to Rs. 43,952-9-0 as against Rs. 28,115-14-0 in the previous year. The Life Assurance Fund at the end of the year stood at Rs. 5,23,141-13-9 as against Rs. 4,18,016-4-8 in 1918. During the year 67 policies lapsed, the policies in force at the end of the year being for the value of Rs. 32,63,804-2-0 of which Rs. 36,500 are re-insured. The Revenue derived from premiums, interest, and other items amounted to Rs. 1,82,776-7-8 for the year while the out-go for the year, exclusive of claims, surrenders, depreciation and dividends etc., amounted to Rs. 28,151-2-3 which

includes only Rs. 200-2-9 on account of advertisement. Since the establishment of the Company, Rs. 1,43,885-1-0 have been paid in satisfaction of claims. A dividend of 4 per cent was declared for the year under review.

The Directors' Report is accompanied by copies of the Audited Accounts and the report of the Auditor Mr. M. K. Dandekar, an Incorporated Accountant, showing that he has personally examined and counted the documents relating to the investments. The assets of the Company on the date of the Balance Sheet amount to Rs. 6,65,478-15-0 of which over Rs. 6 lakhs are invested in Deposits with the Controller of Currency, Indian Government Securities, Indian Municipal and Provincial Securities, Indian Railway shares, Fixed Deposits in Banks and loans on the security of the company's policies, besides balances on current accounts.

From the Report and accounts presented to us for review we have no difficulty in concluding that the year 1919 has been a very notable one. In the matter of new business, the company's figures constitute a record far in excess of anything attained by the company during the past years of its existence. It is hoped that the company will, in future years, continue to maintain this remarkable progress. The rapid development in the Life Assurance business, may be attributed to

the tendency on the part of the people to regard life assurance as a necessary investment, in view of the influenza and other epidemics and the conditions of uncertainty prevailing in the country both during and since the war.

From the foregoing figures, the ratio of expenditure to the premium income is as low as 18½ per cent. Another favourable feature is that the Amount of Life Assurance Fund has increased during the year by over one lakh of Rupees. Thus, it is a matter of great pride and real satisfaction that, the Directors, while reporting a very large increase in the new business record and in spite of advanced costs all round due to abnormal conditions during and since the war, have succeeded in maintaining the total of the outgoings in the direction of expenses of management and commission at the lowest possible minimum. The insuring public ought to take note of the fact that economy of management, consistent with full efficiency, continues to be a remarkable feature in the administration of this company whose sole aim evidently is to promote the best interests of its policy holders. It should be candidly admitted, in this connection, that there has been current in certain quarters an idea that the company is very conservative, cautious and careful, and even at times overcautious in certain respects such as organising more and more branches through-

out the length and breadth of India and abroad, and in sanctioning increased allotments in giving wider publicity and the like. But, we leave them there for the present and hope that such matters will have the prudent consideration of the Board of Directors both in the best interests of the company and the insuring public. The thoughtful proposers for insurance all over the country are always on the look out for the best form of investment and it is the business of every enterprising insurance company to be always at the forefront by the adoption of suitable methods of publicity to reach the insuring public. The phenomenal increase in the new business enterprises all over the world and the considerably increasing prosperity in the new business achieved by several foreign Insurance Companies due to their transacting a considerable amount of business in this country by the adoption of modern methods of publicity and organisation must be an eye opener to every indigenous Insurance concern.

In conclusion, we congratulate the Board of Management of this company—the only institution of its kind in the Southern India with a purely Indian Directorate whose Chairman is Dewan Bahadur K. Krishna-swami Rao, C.I.E.—to whose initiative and sound guidance the company owes its present prosperity.

THE TATA INDUSTRIAL BANK LTD

The second ordinary general meeting of the Tata Industrial Bank, Ltd. was held at Naxos Buildings, Bombay on the 31st May 1920. Mr. A. J. Bihimoria presiding in the unavoidable absence of the Acting Chairman, Sir Dorab Tata, from Bombay. The paid-up Capital stood at Rs. 1,51,19,321-4-0 on the 31st December 1919. The Demand and Fixed Deposits stand at Rs. 9,31,27,031-8-3 which show the steady and satisfactory expansion of the business. Cash on hand and with Bankers stands at the satisfactory figure of Rs. 2,31,04,400 as compared with the de-

mand liabilities of Rs. 4,12,85,483 or at 56 per cent. Investments in Indian, British and other Government securities amount to Rs. 2,01,55,719 and Bills Discounted, Advances and Loans Receivable to Rs. 6,80,74,629. After writing off the preliminary expenses and brokerage account and placing Rs. 5 lakhs to the Reserve Fund, a dividend of 12 annas per share free of income tax was declared, a balance of Rs. 3,08,324 being carried forward. There are about 30,000 share-holders. The result of the year may be considered satisfactory.

THE POSSIBILITIES OF AGRICULTURE IN INDIA WITHIN THE NEXT TWENTY YEARS.*

By Mr D Clouston, C I E , M A B Sc , Director of Agriculture, Central Provinces and Berar

I HAVE to extend to you a hearty welcome to the meeting of the Agriculture and Applied Botany Section of the Indian Science Congress. I very much appreciate the honour of being asked to preside over this section. The subject on which I am to address you is one which will, I trust be of interest to many here for most of us are beginning to realise how potent a factor science is in the development of India's greatest industry—Agriculture.

It has been said that in the career of a department as in the life of a man, there are stages from which it is appropriate to take a glance backward and contemplate the outlook of the future. Prophecy being the role of science I am to play the part of a prophet on this occasion in so far as I shall in the light of the progress already made in developing agriculture in India try to give some indication of the rate of advancement to be looked for in future.

At the present stage of advancement a study of the history of agricultural development in England where many of the difficulties were experienced which we are up against in India to-day, may prove helpful. Till the latter part of the eighteenth century the agricultural unit in Great Britain was the village with its scattered holdings, common grazing grounds, half tilled cut and poor crop resulting from bad cultivation which was so characteristic of many parts of India at the present day. Many improvements had been introduced before that time, the more enterprising farmers had learnt for example, how to grow turnips, clover, artificial grasses and other fodder crops, how to avoid the need of fallows by adopting suitable rotations and how to grow crops in line by using seed drills for sowing and hoes for interculture. These improvements were however, not generally adopted for many years because of the difficulty of protecting such fodder crops in villages which had not been enclosed.

The Napoleonic wars and the rapid development of our manufacturing industries in the latter years of the eighteenth century and the early part of the nineteenth gave a great impetus to English agriculture by forcing up prices of farm produce. High prices, coupled with a rise in the cost of labour, encouraged the use of labour saving appliances and the production of larger acreage

outturns. The open field system of scattered holdings with its bad cultivation which resulted therefrom began to give way slowly before economic pressure and the more intensive methods of farming which began to be adopted by the leading 'gentlemen' farmers of the land. Consolidated holdings were formed and the cultivation of turnips, clover and other new crops which were to revolutionize farming were taken up on a larger scale than ever before. Progress, however, was not so rapid as it might have been as most of our English farmers of this period, like their fathers before them stuck to their empirical methods based on old use and wont, for there was as yet no science of agriculture which could be applied to the solution of its manifold problems. Such advancement as was made in those days can be directly attributed to the interest taken in improved husbandry by men like Jethro Tull, Bakewell, Ford Townsend and Arthur Young who, though not themselves scientists, in our sense of the term possessed the scientific habit of mind which they brought to bear on the agricultural problems of the day.

Science began to be applied systematically to the development of the agriculture of England about the middle of the nineteenth century, and with very beneficial results. By better breeding and better feeding, better breeds of cattle, sheep and horses were improved out of all resemblance to their progenitors. Great Britain became the world's end for a labour saving machinery and better methods of cultivation were rapidly introduced and improved strains of seed raised. More attention was given to the improvement of the soil by drainage and manuring to the protection of crops from cattle, and to the better housing of livestock. As a result of the improvements effected the average yield of the staple crops and the average weight of cattle and sheep were more than doubled. These and other improvements introduced in the latter half of the last century have added largely to the material welfare of the English farmer. Development would have been much more rapid however had her statesmen fully realized the enormous possibilities there were of agriculture being benefited by experiment and research. For the splendid progress that was made we are largely indebted to the great work done by scientists like Lawes

* Presidential Address to the Agricultural Section of the Seventh Indian Science Congress, Nagpur, 1920

and Gilbert to enterprising seedsmen like Garton and Sutton, to the ingenuity of manufacturing firms which vied with each other in designing machinery suitable for the farm and to the fine example of the larger farmers who were in a position to utilize to the full the modern developments of organization and scientific knowledge.

As a result of the exigencies of the war it was now happily ended, scientific enquiry in all branches of industry has, since 1914, been stimulated to an extraordinary extent. Never before has the value of agricultural science had such recognition. Statesmen and the public generally have come to realize the paramount importance of providing for the endowment of work connected with the development of agriculture on a scale commensurate with its great importance because they now see, as they never did before, that 'the countries which have made the greatest progress and which obtain from their soil the highest returns are those which have increased their research institutions. Denmark was obliged to do so after her defeat by Germany in 1863 and has as the result been able to increase the average outturns of her staple crops by 24 per cent in the short space of a little over 50 years. Germany, foreseeing the possibility of being blockaded by the British fleet in the event of a war with our country, had for 40 years previous to the outbreak of war, been studiously organizing her institutions for experiment and research in agriculture, with the result that when war broke out, her resisting power came as a most unexpected surprise to the allies who had hoped to strip her strength by starvation.

Let us now consider the position of agriculture in India and the possibility of our benefiting from the experience gained in other countries. The economic conditions which obtain at the present time in India resemble in many respects those which stimulated agriculture in England in the early part of the nineteenth century. A great war has again forced up the prices of farm produce to an abnormal figure. The industries of this country are being developed with phenomenal rapidity. The cost of farm labour is rising and will continue to rise for the new industries will continue to draw workers from rural areas. If they are to take full advantage of the golden opportunities which are now offered them, landholders in this country will have to use labour-saving machinery on a much larger scale than formerly, and they will be obliged to adopt more intensive methods of cultivation all round, involving manuring and irrigation on a large scale. So long as prices remain at their present high level intensive cultivation will pay handsomely. Manures, for instance, which were applied at a loss five

years ago can now be applied at a handsome profit. The present favourable position of the market for agricultural produce marks in short the beginning of an era of prosperity for the cultivator if he will but take advantage of his opportunities. He will have, however, to re-adjust in many ways his system of agriculture. To be successful he will have to put more brains, energy and capital into his work and in this we hope that the larger land owners will, like the 'gentlemen' farmers of England of days of yore, take the lead in re-stripping and consolidating their holdings and in developing the capacities of their own estates. It will be the duty of the department of agriculture to play its part by placing at their disposal the best possible scientific and practical advice and in the shortest possible time. I am confident that the Government of this country will play its part well, and that the *laissez faire* policy formerly adopted to the detriment of agricultural development in some countries in the West will not be followed by statesmen in India.

Of the value of the work accomplished by the Department of Agriculture in India within the last 10 or 14 years the Indian Industrial Commission has written as follows. The striking financial results which followed quickly and directly after the employment from about 1905 of scientific specialists in agricultural research demonstrate the wisdom of investing in modern science. This is the unbiassed opinion of a body of men who had considerable opportunities of studying the facts on which they based their conclusions. The work which the department has already accomplished is undoubtedly adding annually to the farming profits of the country a sum which exceeds its total annual expenditure many times over. The rate of advance moreover is likely to be very much greater in the near future than it has been in the past, for we now have a background of exact knowledge available which gives us a most useful basis for future progress. We have behind us, moreover, an enlightened government which has set its seal of approval on the work already accomplished and which has determined to make ample provision for further expansion.

The achievement which has perhaps appealed most to the public is the introduction of superior varieties and strains of seed of the principal staple crops. To take only three of these—namely, cotton, wheat and rice, there is reason to believe that approximately two and a half million acres of improved varieties of cotton and one each of wheat and rice, are already being grown. If the extra annual profit accruing from the cultivation of these were only two rupees per acre even, it would

mean in the aggregate a total extra profit of approximately 90 lakhs of rupees, which far exceeds the total annual expenditure on all the departments of agriculture in India, but the actual extra profit from the introduction of improved varieties of these three crops is at least four times the amount which I have stated. This, moreover is only a fraction of what has already been achieved for the activities of the department now extend over a wide field including not only crop improvements but the introduction of better and more intensive methods of cultivation all round. The introduction of a one per cent improvement here and a two per cent improvement there in the aggregate, adding largely to the wealth of the cultivator and enabling him for further progress. It is evident from what has already been accomplished that the department should within twenty years be in a position to introduce improvements which will add many crores of rupees annually to the farming profits of the cultivators.

The extent to which future progress can be guaranteed will very largely depend on the measures adopted by the Government of this country to secure an adequate staff of first class specialists in agriculture and the sciences allied thereto. We want the very best brains which the Universities of the West can turn out to help in the solution of India's agricultural problems and to help in training Indians for the great work. Nor should time be wasted in getting these foreign train research men and original experimenters. Effectively takes many years and such men even when fully trained cannot reasonably be expected to produce results till after years of careful investigation as a rule. Owing to the present shortage of staff our work is being carried on under great difficulties and progress is retarded thereby. The value of the improvements already effected by a small staff has no doubt been surprisingly great but let us not forget that up to the present we have tackled only the most obvious lines of improvement. We have merely scratched the surface so to speak for the new knowledge which is to add tangibly to the profits of the cultivator we shall have to dig deeper. We have not as yet, for instance, given much attention to the question of cattle improvement by better feeding and breeding. Personally I am of opinion that this is one of our most hopeful fields of investigation and I am confident that wonderful improvements can and will be effected within the next twenty years.

Much has already been accomplished in the way of improving the staple crops of the country by selection, and hybridization, and this has paved the way for further improvements by better tillage methods and manuring

but for better cultivation we require better implements. Some thousands of improved ploughs, cane mills and other implements are now in use in rural India but the existing demand is I am sure, a mere fraction of what it will be in the near future. It is the duty of the department to see that this growing demand is met satisfactorily. It is its duty, too to assist manufacturers in devising suitable implements, to induce agricultural associations and unions to start depots for the demonstration, sale, hire and repair of types suitable for the tract for which they are required and to assist purchasers in setting up plants if necessary. But here again we are at present handicapped for want of a staff of specialists. Some provinces have not yet obtained the services of an Agricultural Engineer with the result that duties which ordinarily fall to such an expert are entrusted to Deputy Directors, very few of whom have had any training in Mechanical Engineering. We urgently require for each province an Agricultural Engineer to help to devise and set up improved types of agricultural machinery and we want to see implements of the type required manufactured on a large scale in this country.

Much of the cultivated land in India has almost reached the maximum state of improvement, a great part of the cattle manure which ought to go back to it, is burnt as fuel and other available manures have not yet been used extensively. Indian soils over large areas have thus been starved for centuries and are hungry and therefore very responsive to manuring. It is largely due to the judicious application of water and manure that the crops obtained on Government farms are so much better as a rule than those of cultivators in adjoining villages. The testing of green manures, oilcakes, bones, fish mineral manures etc. and the study of their relation to bacterial life in the soil have been started. The result already obtained indicate the great need there is of inducing the cultivator to do everything in his power to conserve his farm yard manure and to supplement it by using the available manures such as bones, oilcakes and green manures. In this the department can and is giving him valuable assistance by advising him as to the kinds and quantities to apply and by helping him to organize depots for the sale of manures which can be used economically. It can assist too in establishing fuel reserves for the supply of fuel to villages, for want of such reserves cultivators over the greater part of India are compelled under existing conditions to use the dung of their cattle for fuel. There is no other course open to them at present.

The damage done annually to our staple crops by fungal diseases and insect pests is enormous. Here again we have a promising field of investigation which for want of staff, we have not as yet been able to explore at all fully. Much has been done no doubt in the way of studying the life-histories of these diseases and pests but with the limited knowledge at our disposal we are not yet in a position to recommend remedial measures except in a very few cases.

The conditions for fruit growing in India are most favourable, and the subject is now beginning to get some attention from the department but here again for want of experts in fruit-growing the work is at present relegated to men who have no special knowledge of the subject. The whole field of agriculture, in short, is still bristling with unsolved problems which cannot be investigated effectively for want of trained specialists in the different branches of agricultural science involved.

The degree of specialisation and of intensive concentration required for sound research in the different sections of the department is not possible at present. The circle of the average Deputy Director of Agriculture for example is so large and his duties so manifold that he can devote only a small fraction of his time to experiment and research without which real progress is impossible. From the results already obtained by our botanical experts, who have devoted attention to the improvement of the staple crops, there is but little doubt that it would pay handsomely to employ in each province a sufficient number of first class botanists to deal with all the more important crops and the number of crops allotted to any one man should not ordinarily exceed two. There are undoubtedly problems enough in each province to occupy the whole time of several such men. To put one man in charge of more work than he can do efficiently is in short false economy, and this applies not only to Deputy Directors and Botanists but to other experts as well. In every section the men employed are too much distracted at present by the great variety of problems which they have to tackle. So long as we are understaffed moreover it will be impossible for experts to give their assistants the specialised training which is so necessary in the interest of efficiency. Farm Superintendents should for example be trained in experimentation, plant improvement and other lines of work entrusted to them before they are put in charge of experimental stations and the men to be put in charge of demonstration and organization work should similarly be specially selected and trained for that class of work.

If we neglect to make adequate provision for experiment and research, we shall sooner or later find ourselves in the position of having nothing new to teach the cultivator, if given an efficient staff on the other hand there is reason to believe that it will become increasingly easy to get him to adopt our teaching, for as a result of the work which the department has already accomplished his confidence has been gained to some extent and he is now more willing than ever he was to make use of new ideas. To get that teaching adopted in the shortest possible time, we shall require many more government farms and a more complete district organization including taluq agricultural associations and unions working under the guidance of the department. Each taluq or tahsil of a province should have its own government farm to which cultivators could come for help and advice. From these farms they would get their supplies of improved seeds, manures and implements and agricultural literature of interest to them might also be stocked there. The taluq farm would be the centre for the meetings of the taluq agricultural association and for agricultural shows. It would be the centre too for agricultural education. Each farm might have its own agricultural school where the sons of landholders could be trained in the practice and principles of agriculture. The villages of the taluq might be divided into groups of ten or more each group constituting an agricultural union which might have its own co-operative shop or depot for the supply of seeds, implements, manures, agricultural literature etc. The taluq agricultural association would consist of the office bearers of these agricultural unions, while the members of the agricultural union would be the representatives of the ten or more villages included in the union. These unions would arrange for the sale and hire of implements in the villages and for the sale and distribution of other articles stocked in their depots. Each village of a union might have its own seed farm, its own stud bull or bulls, and its own fuel reserve. To control this organization efficiently it would be necessary to have a managing committee for each district with the Deputy Commissioner as chairman and the Deputy Director of Agriculture as agricultural adviser. The non official members of the committee might consist of representatives elected every year by the taluq associations. The duty of the committee would be to define the policy to be followed by the taluq associations and unions controlled by them and to allot funds for the demonstration work carried out by the unions. In order to provide money for this work each union could be called upon to contribute part of its profits to a general fund. District and

that agricultural agencies organized in this way would be the medium through which legislative measures for the advancement of agriculture and the amelioration of the people would be carried out. Through these agencies one or more model villages with consolidated holdings, sanitary houses, schools, trim fences and serviceable roads could be laid out and run as object lessons for the whole Taluq. A system of demonstration and co-operation run on these lines would, I believe, help to break down the barriers which at present stand in the way of progress.

In conclusion, I would ask whether it is too much to expect that within twenty years the department is adequately staffed will by patient concentrated, and intensive investigation have accumulated a body of knowledge in every branch of agriculture which may benefit India to the extent of many crores of rupees annually. And is it too much to expect that, by working

with and through the people, it will be possible to get them to apply that knowledge? In the past the department has had its successes and its failures, but its successes have been far greater than Provincial Governments ever anticipated. An era of still greater accomplishment lies ahead of us. Our successes of the future will, I am confident, surpass our highest expectations. The great task of reconstruction which lies before us is well worth all the energy and brains we can put into it, for on the development of her agriculture depends not only the prosperity of India's many millions of agriculturists, but to a great extent the lot of those engaged in other industries dependent on agriculture. Increased production will help to banish famine and poverty from the land, and to bring us near the realization of your hope, namely to make India a garden ringing with cheerful and contented life with smiling fields and food in plenty.

INDUSTRIES

THE IMPROVEMENT OF FRUIT PACKING IN INDIA

THE Imperial Economic Botanists at Pusa have contributed the following article to the *Agricultural Journal of India*—

When the Quetta Fruit Experiment station was established in 1911, one of the main items of the programme of investigations was the best means of improving the packing and transport of the fruit produced in Baluchistan. The earlier results were published in 1913 in Bulletin No. 2. A second revised edition was printed in 1915 and during 1919 a third edition has been called for. In the present paper it is not proposed to repeat the contents of these bulletins but to direct attention to the main results obtained and to refer briefly to certain general principles which have emerged from the work.

Improved fruit boxes were first placed on the market at Quetta in 1912 when the sales reached Rs. 700 in value. The demand rapidly increased during 1913 and 1914 and in 1915 boxes to the value of Rs. 5,000 were sold by the middle of the season, by which time the available stocks had disappeared. During the three succeeding years, 1916-18, the provision of adequate supplies became difficult due to high prices, to the shortage of timber and to the railway restrictions in force throughout India. The work, however, was continued and the sales reached Rs. 8,000 during 1919 although the stock of the popular non-returnable crates was exhausted early in the season.

In 1919 the Frontier fruit trade laboured under many disadvantages. The war with Afghanistan was in progress and for a time the supply of Kandahar fruit stopped altogether. The border was disturbed, raids were frequent, and delays on the railways were unavoidable. That the sales of fruit boxes reached the highest point under such adverse circumstances speaks for itself.

Two railway concessions have proved of material advantage into the introduction of modern packing methods among the fruit dealers. In 1916 the Railway Conference Association agreed to our proposals that all parcels, including fruit, should be grouped for purposes of charge and that four types of returnable boxes, recommended by the Fruit Experiment Station, should be returned free from all stations in India to Quetta and Chaman. These concessions are now being very generally utilized and they have greatly stimulated the use of the 24-punnet returnable grape crates and of the cardboard peach boxes.

Seven types of fruit boxes are now on sale at Quetta. For peaches, nectarines, cherries, apricots and plums, three sizes of compartmented cardboard boxes have become popular. For the grape trade the 24-punnet is the unit adopted. These are set up in crates holding 8, 16 or 24 punnets arranged in tiers separated by lattice floors.

About a thousand of these returnable crates were sold during 1919, the retail price being Rs 5-8 each. This is a high price to pay for a fruit box considering the fact that the ordinary baskets and boxes in use can be purchased for a few pence. The dealers readily pay cash for these expensive crates and the only difficulty is to assemble sufficient to meet the demand. The advantages of packing the grape crop direct into punnets in the vineyards are now being recognized and the large returnable crates supplied by the Fruit Experiment Station are a common sight on the roads leading to Quetta. Already the larger dealers are considering the question of getting this type of package introduced into the vineyards of Kandahar.

There is no reason why the specially made standardized returnable fruit package should be confined to Baluchistan. The principle could be easily adopted in the North-West Frontier Province, in Kachmir in Kulu-Kumail and in other parts of India. The Railways have shown their willingness to assist by means of valuable concessions. The efforts made to improve fruit packing in Baluchistan and there is no reason to suppose that equally effective assistance would not be given to other fruit growing localities. The non-rigid type of fruit package of the basket type is not adapted for long journeys and Indian conditions and its place should be taken by returnable boxes and crates by which the carrying capacity of the railway vans can be greatly increased and by which the traffic can be more easily handled. By such methods the product reaches its destination undamaged and therefore commands an enhanced price.

Our experience in removing the disadvantages and in which the fruit trade in Baluchistan formerly laboured and in establishing modern methods of fruit packing has brought out two things—the rate at which time-honoured practices and ideas change in India and the importance of time and patience in implanting a new idea. When in 1911 we commenced these investigations, we were told on all sides that cheapness was the

first condition of success in placing new packages on the market. We were constantly reminded that the grape baskets and old kerosene oil boxes then in use were cheap and that they could be purchased for very small sums. When the 24 punnet returnable grape crates were first brought to the notice of the dealers, they were considered too expensive and altogether unsuited to the conditions of the local trade. A few of the more advanced merchants, however, agreed to try them. The grapes were found to travel perfectly even to places as distant as Madras. A change in the attitude of the trade then began to make its appearance. A demand from the more advanced cities like Bombay that Baluchistan grapes should be packed in punnets followed and from that time success has been assured. The difficulty has been to meet the demand rather than to sell the crates. Nothing is now heard about the cost.

Time is a factor in India in the introduction of new methods to which an efficient attention is often paid. This is specially important where trade is concerned. Dealers of all kinds are little business and practically all their working hours are spent in details connected with purchase, sale and finance. Particularly is this the case with the Frontier fruit dealers whose output of work during the fruit season considering the means at their disposal is extraordinary. They have absolutely no time for experiments or for anything else beyond the day's work. For which men patience is essential and they must be given ample time for new ideas to sink into their consciousness.

This experience proves that too much attention can be paid to the ideas of the people of India towards new methods. They are apt to be frankly sceptical at first and to exhibit that conservatism which is so valuable in protecting the race from disaster. The inventor must therefore be prepared for this and when he is fortunate enough to discover a real improvement and the scheme possible under the circumstances he should resolutely persist in keeping it before his public year after year.—*The Indian Trade Journal*

INDIA'S INDUSTRIAL PROGRESS

At the second ordinary general meeting of the shareholders of the Tata Industrial Bank Ltd held at Bombay on the 1st May 1920 Sir Dorab Tata's address was read from which extracts are given below.—

Trade of India. The external and internal trade of India has been good and according to the published figures our Exports of Merchandise during the last Official Year exceed our Imports by over Rs 100 crores. These figures are all the more remarkable when the

embargo on the export of food grains is taken into consideration. We have been faced with high prices and of late the cost of living has risen by leaps and bounds and now approximate conditions which have existed for quite a time past in other parts of the world. With the increase in prices industrial unrest has developed and we have had strike after strike extending pretty well all over India. I am the last to suggest that industrial unrest necessarily means an evil day for this country, Labour and Capital must live and let live, and we shall

tration and the setting up of Conciliation Boards all over the country we have the surest method of bringing the opposite points of view together

Money—The course of money for a long time showed no extraordinary fluctuations but during the past two months money has become very tight. It was a curious time at the height of our Cotton Export Season for Government to contract the note issue and this contraction if persisted in on the same scale would have precipitated a crisis in India.

It is to be hoped that this policy of contraction will not continue. Any increase in the note circulation has been backed either by coin or by gilt edged securities and under the impulse of War conditions and high prices it was only natural that our note circulation should increase in volume as it has done. Now Government retain the right to issue emergency Currency during periods of seasonal trade activity but I think the basis upon which such issues are to be made is subject to criticism. In America the Federal Reserve Board do not fix an upper limit of 8 per cent before such emergency issues can be made and this country and America in some respects are closely akin. For example both countries are in the main the agricultural countries this country is cut to extend and create further manufacture and in this respect plenty of inspiration from the achievements of the United States of America both countries are large countries. I would suggest that the present system should be modified and brought into closer relationship with that prevailing in the United States of America and that when trade is brisk these emergency notes be issued against Inland Bills and not Foreign Bills as recommended by the Currency Commission.

Currency Report—I would say a word in passing on the Currency Report which was awaited with such interest by the public of India. I am not concerned with the policy on the various steps taken before the issue of this Report. During the War India was a partner in the Empire, and if she suffered unduly from the point of view of her finances by being such a partner, I would repeat that she cheerfully sacrificed her interests for those of the Empire as a whole for the ideal of Liberty for which the Mother-Country and her Allies were then fighting.

The Currency Commission were requested to report as to how Exchange might be stabilised and since the issue of this Report and during the past few months I suppose Exchange has never been more unstable. It appears to me that the Selling of Reverse Councils and the artificial forcing of Exchange rates up into the

neighbourhood of 2s 10d was not in the best interests of this country. Water will not flow uphill and there is a limit to the interference with the normal course of trade. I deprecate the gradual frittering away of India's Sterling resources more particularly when stability, for which we seek and pray has not been the outcome of these offerings of Reverse Councils on London. I also think that a 2s Gold Rupee may defeat the intentions of its advocates. There is a level at which export must suffer in the long run and high priced monopolistic export may induce substitutes and a challenge to their supremacy—other countries are busy trying to reduce inflation of prices and with this deflation may come a period when our export will suffer from the limited demand from other countries.

Imperial Bank of India—We welcome the proposed inauguration of the Imperial Bank of India representing the combination of the three Presidency Banks. We express a hope that the new Government Policy will result not in increased competition in Commercial and Industrial Banking but the coming up of the machinery to discount trade bills endorsed by responsible Banks. Even in our short history there have been times when we felt the necessity of a Central discounting Agency if trade is to go on smoothly and we are to do the maximum amount of business for our clients.

Before leaving this subject I voice the hope of many Indians all over India when I express the wish that it may be possible to have at least four Indian Directors on the Head Board of this amalgamation of the Presidency Banks.

Banking Inflation—There is another feature to which I invite Government attention and that is the introduction of a system of Official inspection of all Banks. The Banking crisis of 1914 resulted in the shake out of a number of weak banking institutions but when all is over there is always a tendency for mushroom Banks and Companies to come into existence. When they collapse they inflict harm upon the older and more carefully managed Institutions. They destroy confidence in the Depositor and in fact they put back the Banking side of a country's development by a number of years at least. I am told that the reason that Government have not gone further with this matter is because of the difficulty of defining a "Bank" and no doubt they have in mind the numerous Indian Bankers who carry on Shroff Business. May I suggest that such a difficulty might be got over by restricting the inspection to Banks registered under the Joint Stock Companies' Act

Such legislation admittedly would be of great service to the business community and I respectfully urge that this matter be again taken up and pushed to a speedy conclusion.

Industrial Flotations—The country has been passing through a boom of industrial flotations such as never occurred before. There has been an enormous amount of money for the time, so king investment and stimulated by the larger profits which in recent years have been made by existing undertakings, many new projects have been launched. It cannot generally be said that they have been undercapitalised, but the investigations we have made lead us to think that the difficulties regarding expert staff and trained workmen have been underestimated, whilst inadequate account has been taken of the rise in the cost of plant and the inordinate delays in getting deliveries. We have, therefore, had to adopt very cautious policy in our underwriting business.

Board of Industries and Munitions—The report of the Indian Industrial Commission emphasised the paramount necessity of rendering India industrially more self-sufficient and strongly advocated the establishment of an Imperial and Provincial Industrial Department. We welcome the appointment of Sir Thomas Holland as President of the newly constituted Board of Industries and Munitions as the first fruits of the policy which his Commission recommended, but we have at the same time to face the fact that the political situation has very materially changed in the last 12 months. Industries have been made a transferred subject and their development or otherwise is now entirely a local matter which will be under the control of the Ministers and the Government of India and the Imperial Officers will be able to do little more than offer advice and secure to some extent co-ordination between the Provinces. Already considerable discussion has arisen regarding the establishment of Imperial, Industrial and Scientific Services, due I think largely to lack of appreciation of the difference between a Service and a Department. I cannot here go into the merits of the controversy, as it is a very complicated question, but we have definitely come to the conclusion, which I think it is well we should not conceal, that without the creation of some such organisation as implied in these proposed "Services," it will be extremely difficult for us in India to obtain the help we shall undoubtedly require from Government if we are to pursue a continuously active development policy. The men we shall need must have local knowledge and experience, and this they will be able to acquire in the proposed "Services." I sincerely

hope from motives of economy these Services will not be understaffed as we hope to borrow from them. That we should be able to do so is the strongest argument for their creation, and I think this should always be in the fore-ground when questions relating to the provision of scientific assistance to Indian industrial development come up. Hitherto the educated youths in this country have not displayed any great eagerness to accept the prospects offered by Industries, but it is necessary that they should do so and that inducement should be held out to that end. It can no longer be said that India is a poor country requiring capital from outside to develop its resources. At last that great difficulty has been overcome and not only is Capital now available in sufficient amount, but it is likely to increase steadily with the development of Banking facilities which provide for its mobilization.

The necessity for Technical and Industrial Training—It would perhaps be unwise to make any definite statement regarding the extent to which a change is coming over the habits of our people, but there is no doubt that banking deposits are rapidly increasing. All this is to the good, but progress is greatly hampered all along the line through lack of qualified men to initiate and carry on industrial enterprises. Above all, we want men of the mechanical engineering class, more fitters, mechanics and engineering tradesmen, whilst of specialists in technical trades, we have far too few. It is, therefore, to be urgently demanded from the Government that adequate provision should be made for training in all these branches of industry. We want more schools associated with our present mechanical workshops and we want besides several Technological Institutes, specialised schools of Metallurgy, tanning and leather, manufacture dyeing and bleaching, sugar cultivation and manufacture, sericulture and silk weaving, glass making, and blowing, whilst it is time that our great indigenous artisan population should be afforded opportunities to improve their technique and instructed as to the needs of modern markets.

Industrial Banking in India—Conditions under which business is now carried on are far from normal and as Industrial Bankers we have to take long views and pursue a cautious policy. This Bank has been founded to help in the development of our admittedly great resources and though possibly we have not yet realised the sanguine expectations of some of its supporters, we have already behind us a record of work done of which we need not be ashamed. The houses of Agency and ordinary Banks have hitherto financed industries in India with no small measure of success.

and the more highly specialised work which we have undertaken can only come to us *passu* with the creation of industrial conditions it is our object to support. The industries, which form the backbone of our modern system, are of a simple type and they involve the investment of but little capital compared with the fluid capital it is required to work. Almost unwittingly a vast amount of industrial business is carried on by Indian banks and our investigations clearly prove that the outcry for special Industrial Banks arose entirely from men inadequately equipped by experience and knowledge to run the concern they had started or were in charge of. At the same time it has become evident that there was a need for a very strong organisation of Capital that could promote new venture on a scale sufficiently large to ensure the success. In addition to remedy the crises of qualified technological and consequently able to make complete preliminary investigations we can embark on undertaking beyond the resources of ordinary individuals or corporate bodies—namely financial resources.

The Sugar Corporation of India Limited. As the result of a few days' successful planning, at the disposal of the Sugar Corporation of India it will be possible to carry on operations in all the main sugar growing areas. But the ever scarce Capital is it is quite inadequate to effect the revolution in the industry which we hope to achieve. The object of the Corporation will be to stimulate local enterprise and to provide a nucleus around which local resources may crystallise. The problems to be solved are mainly connected with land and labour and we feel certain that vast improvements can be introduced through the application of Capital to provide for more intensive cultivation and to erect modern mill equipped with the most efficient machinery available. Before the War India was cultivating nearly 3 million acres of cane and importing nearly 900,000 tons of sugar. Last year (1919-1920) the imports had fallen to 487,000 tons but the value has increased from 15 Crores to nearly 2 Crores.

Estimates of the efficiency of indigenous method of extracting the juice from the cane vary from 56 to 67 per cent. Whilst expert opinion considers that by introducing improved types of cane and by adoption of a more intensive system of cultivation the yield could easily be doubled except in a very few areas where already high grade cultivation has been introduced. You are all aware of the high prices which now obtain for sugar. What the future course of the market will be, I do not venture to predict but it is safe to say that

pre-war rates are not at all likely to prevail again for at any rate many years to come. I should like to conclude my remark on this matter by reading to you a short quotation from the report of the Empire Sugar Supply Committee of the Society of Chemical Industry—

'Everything pointed to India as being the place to consider first. It was the last place to operate from quickly while letting all the other places expand as much as they could. Sugar did not seem a thing that in normal time could stand a very long freight. It might pay to grow sugar with a poor yield in a country that was nearer to you rather than in another where the yield was large but where there was a big freight to pay and consequently our lying place might be able to get sugar for their own want despite poor yield. Because shipping could not bring sugar cheaply to the distant places from a better and cheaper sugar country. But where sugar could be produced more cheaply it could be put on board ship and so be able to stand a big freight, but which might easily be the case of India.'

Obviously the committee looked to India in the future to export sugar and I think we are doing as much as we can to burn about that result.

The Industrial Needs of India. The Great War disclosed in an unmistakable manner the deficiencies in India's industrial equipment and the necessity for joint action by the Government and by the people of India to remedy the existing deplorable state of things. We are ready to go ahead. The people are now willing to invest instead of hoard their wealth and we see every sign that Government is abandoning its *laissez faire* attitude and is coming out to assist us in our efforts. It is up to us to clearly indicate what we want. I would like to mention one or two matters though obviously time does not permit me to dwell upon them at any length. First and foremost we want improved facilities for the transport of our merchandise, the perennial shortage of rail-road is an old story which cannot be passed over till it is remedied. Next we want new Industrial centres and an active policy framed to alleviate the congestion at our few ports. Looking forward but a few years we see clearly that we require additional outlets for our growing trade and commerce and we recognise that a wise provision should be made to meet the prospective growth of traffic. Industries can only flourish if our labour is contented and happy and that can never be till efforts are made to remove the over-crowding and unsanitary conditions which prevail in some of our great cities. Expansion in some cases is possible, but the real remedy is the creation of new

cities and the re-organization of the railway services to feed them both with food-stuffs and the raw materials of their industries. I will not now detain you with a dissertation on railway rates, but it is obvious that they are largely responsible for the concentration of energy in so few centres. Let me voice another demand which it is necessary we should formulate. That is that there should be a more active irrigation policy in other Provinces than the Punjab. Over the greater part of India, there is a lack of enterprise in this direction and few if any efforts are being made to keep abreast with agricultural progress. Large storage works are essential and the stored water will in not a few instances be available for both irrigation and water power. They will be costly works but if a rational system of charging

for the water is introduced and if close control over its use is instituted, the returns will be ample to permit of the cost being regarded as incurred on what in official terminology are classified as productive works. This leads me to my concluding remark and that is that India is now in a position to finance its own undertakings. A vigorous constructive policy is essential to maintain our position in the world and if opportunities are freely provided the necessary funds, will be forthcoming. The value of money must be recognised and less parsimony displayed in the future than has been the case in the past when offering attractions to investors. I cannot help thinking that cheap credit may be too dearly paid for when it means limited credit and consequent stagnation.

INDUSTRIES OF WESTERN INDIA

In his annual report on the industries of Western India for the year 1918-19 the Director of Industries of the Bombay Presidency furnishes some interesting facts concerning the progress and situation of the more important industries of that part of our Indian Empire.

Hand-loom Weaving.—With regard to hand-loom weaving the report points out that the main work of this section is the demonstration of the use of fly shuttle looms and their introduction among the weavers chiefly through the medium of weaving schools. The only profitable line of advance in the hand-loom industry at the present time is the introduction of improved mechanical appliances, as may be gathered from the fact that imported bobbins, reeds, shuttles and pins are now in general use in the schools and their advantages over the country-made article are sufficient to have induced an increasing demand for them by the weaving population. It is to be noted that warping and sizing machines, although unsuited to the individual weaver might be used with some advantage by small factories employing a number of weavers.

Glass.—Owing to difficulties in obtaining coal and the lack of raw materials the glass factories were heavily handicapped in the earlier part of the year, some few even having to close down and had it not been for the fact that a minimum supply of coal was allocated to those factories which were engaged on orders from Government and public bodies there is no doubt that the industry would have been completely crippled. The report goes on to point out that it is not the difficulty of making the glass but the difficulty of meeting foreign competition with which the industry is faced. Bombay City, where no fewer than six glass factories are now located is far from the Indian sources of sand and coal, and has not

the protection against foreign competition which is afforded by railway freights to a place like Allahabad, which has sand at its door and coal not far distant. A survey of the sands in the Presidency suitable for the manufacture of glass is to be made and a conference was to be held to discuss measures for assisting the industry.

Pottery.—With regard to pottery the report states that during the war Mr Fern (Superintendent of the pottery section of the Sir J. J. School of Art) resurveyed the red clay resources at Kurla for the new demonstration factory and visited the Lakhtar State in Kathiawar to select a fire clay for the manufacture of the bricks required for the furnaces of the new factory. He also visited the Ahmedabad district, where he advised a local syndicate regarding the working of its kaolin deposit and inspected the manufacture for the Irrigation Department, of pipes for land drainage in the districts of Nasik and Poona, and gave advice. A large deposit of china clay in the south of the Presidency is also under investigation.

Oilseed Crushing.—The expansion of the oilseed crushing industry virtually depends on the rate at which the Indian agriculturist can use increasing quantities of cake for fodder and manure. India, it is pointed out, possesses ample crushing power to meet all internal requirements of vegetable oil, and facing new internal demands an expanded oil industry must look for new markets abroad. Again, should a better Indian market be established for the cake, new outlets would in all probability arise for the oil, for instance in an enlarged soap industry. The possibility of improving the quality of the oil from village presses might also well be worth investigation.

Casein Manufacture—Casein manufacture is by no means a new industry in the Presidency but it seems capable of technical improvement and expansion. Experiments have been carried out or are still in progress for the production of casein from separated milk by the method employed in France of using an electric current and also in the manufacture of galalith. Investigations were begun for the manufacture of casein cement, for aircraft purposes and there are now good prospects of locally made casein becoming the basis of further local industrial development.

Resin and Turpentine—With regard to the oleo gum resin of *Boswellia serrata* it is pointed out that although the turpentine produced is of good quality the resin is not so good and the gum practically valueless.

The production of an improved gum might possibly result in the crude resin being exploited with profit.

Bitterns The utilization of the bitterns at Khuraghoda is one of the two or three schemes formulated for the establishment of new chemical industries near Bombay. Some of the objects of the new process are a greatly improved production of magnesium chloride and magnesium sulphate, economy of fuel and the full recovery of bye product of good quality. The possibility of using the bitterns as a source of bromine is being tested and investigations will also be instituted regarding the possibilities of manufacturing magnesium salts and extracting bromides at Aden. The establishment of a bromine industry within the Empire will probably depend more upon Imperial policy than mere industrial and commercial factors (*Chamber of Commerce Journal*).

FINANCE.

FISCAL COMMISSION FOR INDIA

Total Amount of 'Reverse Council Bills

Mr Charles Edwards in the House of Commons last month asked the Secretary of State for India if he would state what was the total amount of 'reverse council bills' sold by the Government of India under the new policy of fixing the rate of exchange on the basis of the London New York rate and introduced such amount to include remittances paid to this country through the Post Office out of what funds a payment being made here against such bills, what was the rupee equivalent at which these funds were accumulated and stood in the books, what was the rupee amount now realized by such sales, what was the total loss incurred so far by the Government of India by these sales, and against what was it to be debited.

Rupee Value

Mr Montagu replied—The total amount of 'reverse council bills' or sterling transfers sold since February 1920 is about £30,000,000. Remittance through the Post Office during February, March and April amounted to about £2,000,000. Payment against these transfers is being made from the paper currency reserve and from Treasury. The funds held in the paper currency reserve stand in the books at a rupee equivalent of Rs. 15 to the £. These funds as also the Treasury holdings, were laid down in London at rates of exchange varying from 1s 4d to 2s 4½d. The rupee amount realised by the sales of reverses mentioned above is approximately Rs. 23 crores. The precise loss cannot be calculated, as the

funds held in England cannot be earmarked against particular remittances from India, these having been effected as just mentioned at varying rates. Moreover it will in any case be necessary to recognise by the Currency Committee to reduce the sterling holdings of the Government on the basis of a 2 rupee. On this basis the net loss on the sales as measured in sterling, is approximately £7,000,000 representing the difference between remittances at 1s and the rates actually realised by the sales. The net loss incurred by reason of the high rate at which these remittances were effected will ultimately be debited to revenue which will, per contra, profit by the fact that under the new policy the Government of India will be able to make the remittances necessary for the purpose of meeting their sterling expenditure in this country at a far more favourable rate than was formerly the case. In this connection it may be mentioned that the rise in exchange above the rate of 1s 4d on which the Government accounts have hitherto been based led in the years 1917-19 to an exchange gain on the Government total remittances of about £8,000,000.

Restrictions on Gold Imports

Mr Lunn asked the Secretary of State for India whether the restrictions on the import of gold into India by the public still continued, and what were the reasons for the continuance of the same, whether Indian industrial and commercial opinion had protested against the continuance of such restrictions, whether, as a creditor country with a favourable balance of trade in her favour, India was entitled to receive in gold the

balance due to her by other countries, and what was the total amount of profit made by the Government of India on their gold transactions.

Mr. Montagu.—There is undoubtedly a considerable feeling in India in favour of a removal of the restrictions which it has been thought necessary to continue in respect of import of gold for the reasons given in the announcement of which I am sending a copy to my Hon. friend. The announcement recognises the removal of present control as an objective of currency policy in India. The question of profit on the gold transactions of the Government of India is complicated by exchange considerations. Taking the transactions as a whole, the Government of India estimated that for the year 1920-21 a net loss would accrue. I am also sending to my Hon. friend a copy of the reference to the subject in the Government of India's Indian

Proposed Fiscal Commission

Mr. Robert Richardson asked the Secretary of State for India whether he would lay upon the table the correspondence which had taken place between the Government of India and himself on the question of Imperial Preference.

Mr. Montagu.—The communications which have passed between the Government of India and myself on this subject were of a confidential character, and I do not think that any useful purpose would be served by their publication. I especially understand that the Government of India are now considering the advisability of appointing a Commission to consider the whole question of the future fiscal policy of India.

INDIAN EXCHANGE PROBLEM

What may almost be termed the Indian exchange disorientation shows little sign as yet of being straightened out, and it becomes increasingly plain that considerable miscalculations have been made by the Indian Government as to the practical results of their policy initiated in February last. The point which is found most difficult of elucidation is the fact that whereas the latest India currency scheme set out to tie the rupee to gold and not sterling with the ultimate prospect of a stable exchange at 2s. when the premium on gold had disappeared. The exchange is not now moving with gold but on the contrary stands at several pence below the par of exchange formed by the present price of gold in the London market. Inquiries in well-informed circles have elicited several causes for this apparent anomaly which have been alluded to in these columns, but we are inclined to believe that while these have undoubtedly

contributed to the present position the root of the trouble lies in the internal currency policy which we gather is still being pursued by the India Government. By restricting the exports of gold and by maintaining an internal ratio of 15 rupees to the sovereign, the authorities are effectively preventing the exchange from following the movements in the price of gold. The continued maintenance of the old ratio in India seems to invalidate the spirit of the Currency Committee's scheme and a frank exposition on the part of the India Government clearing up some of the points on which no official enlightenment has been forthcoming since the currency scheme was put into force would undoubtedly be welcomed by the many trading interests in whose business the Indian exchange is a matter of primary importance.

Exchange Banks Attacked

Another aspect of the Indian exchange position which it seems desirable again to touch upon is the active propaganda which is evidently being carried out in India among native trading and banking interests inimical to the Anglo-Indian exchange banks. Cables from Bombay and other centres are repeatedly indulging in a denunciation of the group of exchange banks which are alleged to be profiting in a most flagrant manner in connexion with the sale of the India Government's reserve Council drafts. The disparity existing between the Government's selling rate of the £1,000,000 a week which it is now selling and the market rate at which the banks will sell sterling drafts is well known. But to give any grounds for the attack now being made on the exchange banks it would be necessary to establish the fact that these banks secured the whole or at least the major portion of the reverse Councils offered for tender. The actual proportion secured by each of the exchange banks during the past three weeks is we understand as follows:—May 7, 14 per cent of the total offered; May 14, 1 per cent; May 21, 2 per cent. That is to say the exchange banks secured between them something like 8 per cent of the total and assuming that their allotment even went so high as 10 per cent there would still remain £900,000 of reverse Councils going elsewhere, and these Indian propagandists seem curiously silent on this point.

The Times

THE SOUTHERN INDIA SKINS AND HIDES MERCHANTS ASSOCIATION.

AT the Second Annual Meeting of the Southern India Skins and Hides Merchants Association Madras held last month Mr. Hafez M. Jamil Muhammad Sahib Bahadur as President delivered an important address from which the following are extracted:

Export Duty

We requested Government to levy an Export Duty of 10 per cent on the export of Raw Skin and Hide. While we are thankful to Government for accepting the principle involved, I regret to have to say that the suggestion of our Association represents just as it does the principal tanning interests in the country was not given due weight. Government have not only fixed the Duty at the lower figure of 10 per cent but have also allowed a Rebate of two thirds of the Duty for destinations within the Empire. Now, for this reason this method of protection has not had the desired effect and we still see very large quantities of our raw material taken away to other countries to strengthen their own industrial position to the great detriment of our own industries although we have in this country tanning material sufficient to double and even treble the present output of Indian Tanned Skins and Hides.

Rebate on Export Duty

Since the object of the Government in imposing this Duty is to develop the Industry as far as possible within the country itself, I cannot see the wisdom of giving a Rebate of two thirds of the Duty to European countries. Let me illustrate my argument with a specific instance. On the export of raw stuffs to Canada there is a duty of 5 per cent while 15 per cent is levied on those exported to U.S.A. Now this will only have one effect and it is this. American tanners our chief rivals may prefer to have some factories in Canada import our raw materials at the reduced rate of duty and after manufacture send them over to U.S.A. or other countries for sale. In fact according to my information, they have already started putting up factories in Canada to have the advantage of the reduced rate of duty. Our Association has been all along pressing on Government at least to reduce the Rebate to one third of the Duty. But the Government have not so far complied with our request. To close the loophole afforded to American tanners to evade the Duty as pointed out above, it is to be hoped that the matter will receive the prompt and sympathetic attention of Government and that they would take

immediate steps to abolish the Rebate altogether, or in the alternative reduce it to one third.

Exchange and Currency

As you all know the abnormally high level of Exchange has been and is still seriously affecting our industry and export trade. In fact, this is one of the principal cause why we find our tanning industry in a worse position than it was six months ago in spite of some little protection given by the present system of the Export Duty. It is much to be deplored that Government should by hasty and questionable methods try to keep up the Exchange and even to raise it by leaps and bounds. In fact the sale of enormous amounts of Reverse Councils on London at very high rates. The sale of these Reverse Councils cannot in any way be justified as long as there is a balance of trade in favour of India. On the other hand their sale at a forced up rate of Exchange results not only in heavy losses on the accumulated reserves of the Government of India in London, but also though temporarily has the effect of keeping up the Exchange at a higher level than it would otherwise be the case to the great and lasting injury of the industry, production and export trade of India. The announcement recently made by Government reducing the sale of Reverse Councils to one million a week induces me to think that they have come to realize their mistake and I trust the sale of Reverse Councils will soon be totally stopped. What is more desired to relieve the present tension in the Exchange and Currency of the country is to allow the free importation of Gold into the country and ensure when both the majority and minority Reports of the Currency Commission have agreed in strongly urging. Our Association in their statement sent to the Currency Commission has also strongly urged it. When our neighbouring countries can get Gold freely again to goods supplied by them I do not see why British India alone should be denied that benefit by our own Government. In spite of all this it is most regrettable that Government has not yet removed the restrictions against the free importation of Gold into the country. I earnestly trust that before long Government will do so.

Imperial Preference

When India is about to get Fiscal Autonomy, it is but fair and proper that the question of Imperial Preference should be left open to be decided by the enlarged Legislative Councils, in consultation with the leading industrial, commercial and economic interests of the

country When we see the sort of Imperial Preference involved in the 10 per cent Rebate off the present Export Duty on Raw Skins and Hides and when we realise its adverse effects on our Industry, I should consider that the authorities and the public of this country should pause and ponder deeply before they commit themselves and India to any system of Imperial Preference in advance without fully threshing out the question in all its bearings

Representation on Legislative Councils, Etc

I much regret that our Association representing, as it does the tanning industry of this Presidency and one of the foremost in the country, should have been completely ignored in the allotment of seats in the Reformed Madras Legislative Council The magnitude and importance of the Tanning Industry to this province will be realised when it is seen that out of the total value of Rs 9,56,00, 220 of Tanned Skins and Hides exported from India during the official year 1918-19, Rs 7,45,299 represented the value of exports from the Madras Presidency alone, that is about three-fourths of the total for the whole of India

Import duty

In view of the fact that at present a good many factories for turning out finished leather are springing up in the country, it is disappointing to find that our recommendation to protect and develop this industry by increasing the Import Duty of 7½ per cent now levied on imports of finished leather to 15 per cent has not been accepted Government which is solicitous of the industrial development of the country should show its sympathy in a practical manner by affording us the protection asked for above until at any rate our industries are given a fair start and become safely established

Present Conditions of Our Industry

You all know that owing to various causes, all more or less due to the effects of the recent great world war, principally because of the adverse exchange and financial conditions of the European countries and their consequent inability to buy at present and because of the stocks in London being too heavy to be absorbed locally and also because of the too low Rupee value we get for our stuff on account of the highly enhanced Rupee sterling exchange our tanning Industry is having a very bad time now To protect and safeguard our interests we are working to introduce a co-operative system among the tanners and others concerned in the trade I trust that it will, with your support, reach a satisfactory consummation and that our tanners and our Industry then be enabled not only to withstand the present crisis but also be enabled to come out of it more strengthened and securely founded

Leather Trades School

It is only fair that Government should utilise at least a portion of the revenue derived from the Export Duty on Indian Raw Skins and Hides to the development of the Tanning industry of the country There is a Leather Trades School in Madras but I understand that it is not being worked on sound and efficient lines owing to the insufficient scope afforded to it financially and otherwise When India is on the threshold of rapid industrial development and when the Tanning industry is of such enormous importance to this Presidency I feel that Government should give early attention to the reorganisation of the Madras Leather Trades School on a liberal scale

MINING IN INDIA.

Demand for Chromite

The demand for chrome during the war and the great price to which chromite was pushed, led to a considerable investigation of the deposits in India with some not unimportant results

A recent Indian Geological Survey report deals with the investigations made in Singhbhum where chromite was discovered some few years ago, and since when some 8,000 tons of chromite have been exported Whereas the chromite deposits of Baluchistan are usually in the form of irregular masses or lenses, rendering the making of reliable estimates of ore available difficult,

the Singhbhum deposits are definite bands, which, in some cases have been traced by quarrying operations for thousands of feet As regards economic prospects these chromite deposits of the Kolhan may be stratigraphically continuous to as great depths as the enclosing ultra-basic rocks, but the thinness of the bands of chromite and the numerous small faults will, in the opinion of the geologists who examined them, render it economically impracticable to resort to underground mining Thus it seems probable that the industry will cease as soon as all the ore that can be extracted by opencast has been removed At present only first-

grade ore is shipped, but the possibility of treating in concentration mills low grade ore containing not less than 10 per cent Cr_2O_3 is left over for consideration, especially if future prospecting should lead to the discovery of additional peridotite masses in the unexplored portions of the Kolhan to the south.

Of more importance than the Singhbhum discoveries would appear to be those made in the Mysore State. These are of course, under the surveillance of the Mysore Government and its own Survey. Some of them were prospected in the seasons of 1902-5 and ore along the Nuggihalli-Arsekere strike but it required the stimulus of the war to lead to their development and the discovery of others, and so far with the exception of those which follow we have not seen any report of the developments which have been undertaken. Of these the most important mine open is that of Bairapur from which something like 6000 tons of ore averaging about 50 per cent of chromic oxide was obtained during 1918 and the beginning of this year under a mining license granted by the Government which expired in March last. The Government refused further extension as they are desirous of monopolising the industry as far as possible possibly in connection with schemes for the manufacture of ferro-chrome. Schemes have been discussed for utilising power from the Cauvery Falls, and estimates sought as to costs and other technical matters from existing works in this country. We have not, however, learned of these suggestions going beyond the stage of discussion and the outline, therefore, as well as the ultimate policy of the Mysore Government, is still undisclosed.

A representative complete English analysis of a shipment of 1,200 tons of Bairapur reef ore gave: Oxide of chromium, 51.10, protoxide of iron 21.44, peroxid of iron 1.03, alumina 7.60, lime 0.60, silica 12.10, oxide of manganese 3.0, silica 4.50, sulphuric acid, 0.5, combined water &c. 1.50 and a very severe sample from 10,000 tons of reef ore mixed with powder and surface pebbles gave by analysis in India—

Cr_2O_3	Iron	Silica	Alumina	Calcium	Magnesia
49.61	26.21	9.87	6.21	2.61	11.77

Four representative samples drawn from quantities approximating 6,000 tons of pebbles gave 51.80 per cent, 52.30 per cent, 51.29 per cent, 51.66 per cent of Cr_2O_3 . These pebbles are smallish in size and by weathering become hard and smooth.

Besides the Bairapur mine there are other deposits such as—

Naveley open-cast, producing a blueish ore speckled with magnetite spots, actual English analyses of ship-

ments to this side giving over 50 per cent Cr_2O_3 , other elements being 24 per cent iron, 11 per cent alumina, 4 per cent silica, 10 per cent magnesia. Normally this mine could produce 500 tons monthly. Fairly heavy stocks are held ready for shipment.

Sinduvalli opened in 1907 and shipments since have averaged 50.9 per cent Cr_2O_3 . Taking the average of six shipments the English analysis is—

Cr_2O_3	FeO	Al_2O_3	MnO	SiO_2	MgO	Phos
50.69	16.1	18.29	1.44	1.66	14.66	0.6

It is a hard ore of a bright steel blue tint. Extraction involves comparatively deep mining and under present conditions would produce 250 tons monthly.

Arsekere open cast, lower grade proposition from which unlimited supplies are accessible, apart from important stocks at hand and ready for shipment. Careful sampling and analysis over a quantity of 7,500 tons gave an average of 40.57 per cent Cr_2O_3 and a complete analysis of 1,000 tons gave 40.17 per cent chromic oxide, 18.94 per cent iron, 8.46 per cent silica, 14.10 per cent alumina, 2.15 per cent calcium oxide, 1.72 per cent magnesia. Lump ore, carrying 5.40 per cent Cr_2O_3 can be assured in quantities from this deposit and is suitable for furnace linings.

These and other mines are not restricted in the matter of title in the same way as Bairapur.

The prospective importance of the Mysore deposits is due to the fact that occurrences of chromite have been observed over an extensive area amounting to 80 square miles, and when more work has been done upon them we shall be better able to judge their continuity and depth. Communication to Madras and Marmagao is reasonably convenient, carriage amounting to around Rs. 10 per ton.

The future of these deposits as of many others, must depend greatly upon the future price which the mineral commands. The Chrome Trust controlling as it does the deposits of Rhodesia and New Caledonia, succeeded in raising prices to a high level during the war but with the opening up of the well known mines of Asiatic Turkey competitive supplies may be brought into existence which will further reduce quotations to something more nearly approaching the pre-war basis. (*London Mining Journal*)

THE STAGES OF COMMERCIAL LIFE

Mr L. R. Tansie contributed a very interesting article on "Frenzied Finance" to "Sanj Vartaman".

The First stage in Law. In the beginning, men supplied their wants by force or cunning as might was

right. As the stronger could overcome the weaker to satisfy their desire the worker units joined together. People began to frame rules and regulations governing the conduct of their lives and their relations with one another.

The second stage is money. During the days of barter when people had to exchange commodities, articles like a cow could not be divided and perishables like fruits could not be preserved long enough to accumulate and to exchange for other articles. The necessity for article to serve as a medium of exchange was therefore felt.

The third stage is Life Insurance. The value of a man's life to his dependents was realised when, on his death, his wife and dependents were deprived of the livelihood he obtained for them. Men began to insure their lives by contributing to a fund all their lifetime which would entitle them at death to leave their heirs a sum in proportion to the amount of their contributions to the fund, less the expenses for managing the fund.

The fourth stage is Fire Insurance. People had to guard against fire and other accidents so that a fund was created out of the contributions made by the individuals to which they were entitled in the event of fire and other contingencies.

The fifth stage is the bank. In course of time people began to accumulate money in excess of their wants and requirements and all such surplus was lodged in a common place of safety where experts in the line handled and made use of the money thus collected from individuals by safeguarding and lending it to others.

The sixth stage is Limited Companies. When an enterprise was owned and conducted by several persons, increasing difficulties were experienced in defining their relationship with each other and as to their common property. Then the idea arose of treating such an enterprise as a separate entity having a status quite distinct from the individual taking part in it and capable of doing all things the individual might. The ownership of the whole is represented by certificates of shares, stocks or bonds which could be transferred from one to another without in any way interfering with the enterprise. The liability of the holders of shares was restricted or limited to the amount of the shares possessed by each holder. The law relating to the creation and conduct of such limited companies provided regulations compelling them to keep their affairs in such a manner that all could ascertain of what each consisted.

The seventh stage is the Stock Exchange. As the joint stock enterprises grew large and multiplied, it was

felt that there should be a place where the value of the shares might be ascertained by purchase or sale under the supervision and control of experts. Hence a common market place was created where all those having shares to buy or to sell could meet conveniently and the prices quoted there were made known to the world.

MILLED RICE AND BERI-BERI

To those who use rice eaters, it is a matter of no trivial importance to know something of the rice they eat. It is well known that white table rice is not acceptable as a staple food for coolies. The *ballam* boiled or brown rice is always shipped for the coolies in the West Indies. Burma produces two qualities—Burma and country rice. Burma rice has the husk, pericarp and outer layer removed by machinery. Country rice is soaked in water for at least a day and a night and then is steamed and dried in the sun. The husk is then roughly removed. It therefore retains most of the pericarp and outer layers which contain Protein and phosphates. The use of milled rice is said to produce beri-beri owing to the absence of the organic phosphates in these outer layers. So said Sir Pardey Lukis in his book on Tropical Hygiene. And the Burma or Rangoon rice is exported to India.

According to the latest German investigation into the subject of food values it has been demonstrated that the value of the cuticle of the various grains, which is removed by excessive polishing, does not lie solely in the salts they contain, but the cuticle contains a vital though mysterious principle to which the discoverer gave the name of 'vitamin'. It has been stated beyond doubt that if the vitamins are absent the animal pines and dies even in the midst of plenty. It has also been experimentally proved that hyperæmic disorders, such as beri-beri and pellagra can be induced in animals by feeding with de-vitaminised food. The addition of the salts lost in the removal of the cuticle from other sources does not save them. If the vitamin is absent beri-beri supervenes to a certainty. Pellagra is more difficult to induce but it also is a consequence of de-vitaminised food. Burma rice is described by Sir Pardey Lukis as essentially such a food. It is dangerous to health to make it a staple. The planters should see that their coolies are protected from the consequences of such a diet or their labour "force" will deteriorate.

Sir Pardey Lukis is somewhat contemptuous of rice as a food, as he said 'Rice is the poorest of all cereals in protein, fat and mineral matter. On the other hand it has fully 76 per cent of starch. The starch has the further advantage of being present in

small and easily digested grains. When boiled rice swells up and absorbs nearly five times its weight of water while some of its mineral constituents are lost by solution. It is preferable therefore to cook it by steaming. Rice is only moderately easy of digestion in the stomach. 2 ounces cooked by boiling, requiring 3 hours for its disposal. This is due to the fact that it is not the function of the stomach to digest carbohydrates; it merely passes the rice on to the intestine where it is absorbed with very great completeness; its solid constituents enter the blood as completely as those of meat. This is due to the comparative absence of cellulose. Practically none of the starch is lost, whereas the waste of Protein food amounts to about 10 per cent. It follows from this that rice is one of the foods which leave the smallest residue in the intestines and

this gives it a considerable value in some cases of disease. The nutritive value of rice is much impaired by its poverty in protein and fat. Hence it is not adapted to be an exclusive diet but should be eaten along with other substances, rich in these two elements, such as dal, ghee and eggs. Even as regards carbohydrate it would require about 6 pounds, three ounces of rice to furnish the daily needs of an active man. This would entail the consumption of about 5 pounds of cooked rice daily. Yet rice is known to be the staple food of three quarters of the human race. In the best interests of health rice eaters should see that the rice they eat is of the proper quality and contains the essential element of Vitamin. In the interests of public health, the rice mill owners should take note of this.

NEWS AND NOTES.

Account for Income Tax. The notification dated March 25 1920 issued by the Local Government states that "When the production of accounts is required under section 14 (2) of the Act of the accounts are not maintained either in English or in any of the vernaculars of the Presidency or Tamil, Telugu, Malayalam, Kanarese and Oriya a true translation of the account, written in English or in one of the vernaculars of the Presidency shall be produced along with the original."

Narasavalli Project, Vizagapatam District. The Narasavalli River takes its source in the Eastern Ghats in the Vizagapatam Agency and flows into the Bay of Bengal through the Palikonda tidal drainage channel of 3.92 sq miles of which 168 sq miles is above the Dam. The richness of the silt brought down by the river is proved by the fact that the lands watered by the river yield two or three crops. In 1888 the Government began the investigation of the irrigation project which was completed in 1901 when a preliminary report was submitted to Government. In 1902 proposals and estimate with plans for Rs. 10,82,000 were sent up and recommended for sanction in 1903. It was expected to irrigate 31,200 acres to earn a revenue of Rs. 54,000. The project was sanctioned by the Secretary of State and the work commenced in 1905. Owing to high rates for imported labour and other causes the cost increased and a revised estimate for Rs. 18,16,500 was sanctioned in 1912. In 1918-19 20,855 acres were irrigated and the proposal to irrigate 31,200 acres proved a failure. It is estimated that the total capital investment 10 years after the completion of the work will come to Rs. 21,57,678 and the net revenue to Rs. 68,000 calculated on an irrigated area of 23,100 acres. Thus the investment pays an interest of hardly 4 per cent. It is a matter of consolation that in 1918-19 the year of the widespread failure of the paddy harvest, the project irrigated about 20,000 acres resulting in a good average crop which averted famine in the District.

Government help. The Government have sanctioned that a sum not exceeding Rs. 25 be granted as a free gift at the discretion of the District Magistrate to adolescents released from the Bangalore Borstal Institution with a view to set the boy up in life by providing with tools for his trade.

The International Labour Conference. Under the terms of the League of Nations Covenant in the Versailles Treaty of Peace the International Labour Conference has been organized to be held at Geneva on the 15th June to consider questions relating to seamen's 11-hour of labour minimum scales scale of accommodation, the provision of facilities for finding employment, the prohibition of child labour and other cognate matters. The Government of India as a member of the League of Nations will participate in the conference. 2 Government delegates, 1 Employers' delegate, and 2 advisers to them and 1 work people's delegate with 2 advisers and an interpreter are to attend.

Panchayat court. The Local Government have decided to establish Panchayat courts in 40 villages in Krishna District 1 of the Chittoor District and 26 of the Bellary District.

Fisheries Department. The Government have sanctioned the appointment of 1 Assistant Inspectors on Rs. 30 to 50, 2 Overseers on Rs. 20 to 30 and 2 fieldmen on Rs. 12 to 15 and 15 to 20 to the Assistant Director of Fisheries (Inland).

The Accounts of Government Industrial concerns. In view of the representation made that the system of book-keeping in the Government Treasury and of budgeting for receipts and expenditure is not suited to give a clear view of the financial results of the industrial concerns started and conducted by the Government such as the Kerala Soap Institute Calicut, the Beypore Cannery and the Jam and Pickle Factory, Coonoor, and that a grant should be earmarked for each

Industrial Concern, drawings being charged against it and all proceeds credited to that account, the Government have appointed a Committee with the Hon'ble Mr A Y C Campbell C I E, I C S, Director of Industries, Madras, as Chairman and convener and the following gentlemen as Members —

- 1 The Director of Agriculture
- 2 M R Ry 1 K Rajagopalan Ayl, Examiner of Local Fund Accountants
- 3 Mr Ian Fraser of Messrs Fraser and Ross, Chartered Accountants
- 4 M S E Wood of Messrs Parry and Co. The majority are Government Officers and no non official Indian has been placed on the Committee.

The Committee will consider, among others the following points —

(1) What system of finance and accounts should be adopted in —

- (a) Pioneering and Experimental Factories
- (b) Demonstration and Instructional Factories
- (c) Industrial and Training Institutions run on Commercial lines

(2) Whether in the case of such factories and institutions there should be a relaxation of the rules in the Civil Account Code and if so how the proposed system of finance and accounts should be linked with the Government system and accounts

(3) What powers of purchase should the Manager of such a Factory or institution should ordinarily possess and what safeguards should be provided should Boards of Directors be appointed for such factories and institutions and if so, on what terms

(4) Whether it is necessary for the Manager of such a factory or institution on the head of the Department to have power to place order outside India for stores direct instead of through the Director General of Stores India office

The College of Agriculture, Coimbatore Attention having been called to the defects in the quality of students seeking training in this College the Government appointed a Committee consisting of

- (1) Mr R C Wood M A
- (2) The Hon'ble Rao Bahadur V K Ramanujachariar Averghal
- (3) The Hon'ble Rao Bahadur T Balaji Rao Naidu Garu
- (4) M H Champion, M A, and
- (5) The Reverend S D Bawden

to consider how the standard for the diploma and certificate Examinations of the College could be raised with special reference to the feasibility of attracting a better class of Students and of improving the training imparted in the College

At present, certificates in agriculture are awarded to students undergoing a two years course in practical

agriculture. Students showing special merit in this course are permitted to undergo a further course of 1 year's training in the sciences allied to Agriculture and are awarded the Diploma which entitles them for posts in the Upper Subordinate and the Provincial Services of the Department. The training received by the Diploma holders is considered inadequate owing to the defective nature of the general education whereby students seeking admission are not benefited by the Specialised scientific instruction.

The Committee have recommended to improve the pay and prospects of the services of the Department to grant travelling allowances to officers of the lower grades to grant scholarships to students of particular districts and classes and to re-examine the question of affiliation of the college to the University.

The Government have accepted the Committee's recommendation to separate from the outset the courses for the diploma and the certificate the former being made open to students of the Intermediate standard of the University and to cut down the course from 3 years to 2 years. The Government have also sanctioned the award of 20 Scholarships of the value of Rs 25 per mensem to students to be admitted to the Diploma course with free tuition and lodging. The new diploma course will be introduced with effect from the current year. The Director has been requested to pay special attention to the remarks of the Hon'ble Mr V K Ramanujachariar in his minute emphasising the necessity to raise the standard of practical training of the diplomaists to fit them to occupy the higher posts in the Agricultural Department and to guarantee to the first diplomaist of each year a post in the Provincial Service.

The Asiatic Enquiry Commission This Commission have issued their interim report dated May 12th, 1920 to the Governor General of South Africa, which according to a *Press communique*, is as follows —

'During the course of our enquiries strong evidence has been laid before us which tends to show that there is at present owing to the shortage of rice and other causes, a considerable number of Indians who, with their families would be prepared to return to India if opportunity were afforded them.

We have also had evidence from an influential Calcutta merchant, at present on a visit to the Union, who until recently, was Chairman of the Central Employment and Labour Board under the Government of India that at the present time, owing to industrial development, the labour supply in India is insufficient to meet the demand and that good wages are being paid.

The evidence on these points is confirmed by Sir Benjamin Robertson and Mr G L Corbett, the official representatives of the Indian Government.

We therefore strongly recommend to Your Excellency that prompt steps be taken to provide the necessary shipping facilities and to appoint an official, well acquainted with the Indian mind and their methods, to act in a sympathetic manner, and to lay before the Indians the advantages of immediately returning to India.

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EDITED BY

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"*Commerce and Industries* — To those who are interested in Indian Industry and to all those people who are desirous to know about the industrial development of our great Indian Empire, we can strongly recommend this monthly Journal. A perusal of its pages month by month will, we are certain, enlighten them as to important developments which are continually springing up in our richest possession. Each monthly issue contains a special contribution of considerable interest, that under review gives a most enlightening article on the Paper Pulp Industry. There are other useful notes on agriculture generally which are certainly educational for those who have not, up to the present, realised how far advanced the science of the farm has become in India. Anyone who wishes to receive this exceedingly interesting and instructive Journal regularly can make arrangements with the Editor, whose address is 5, Mount Road, Madras, INDIA—*Bazar and Exchange (London)*

We have received a copy of "*Commerce and Industries*" — a Monthly Journal of Indian Material Progress. It contains exceedingly useful and practical articles on all questions affecting this important side of Indian development. Such subjects as Trade, Finance, Industries, Economic Development, Agriculture, Indian Tariff Reform are discussed—(*Britain and India, London*)

Commerce and Industries — The Journal contains many useful and informing articles. "It is full of valuable information on different topics relating to trade and industry of foreign countries as well as that of India"—(*New India*)

Commerce and Industries — Contains useful editorial criticisms on important subjects —(*The Liberal*)

"*Commerce and Industries*" — This well conducted and useful monthly, in its issue for May, as usual, contains a number of original contributions on matters of educational and business value. * * the current number also contains a fund of useful information on Industrial and Commercial subjects—(*The Hindu*)

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COMMERCE & INDUSTRIES

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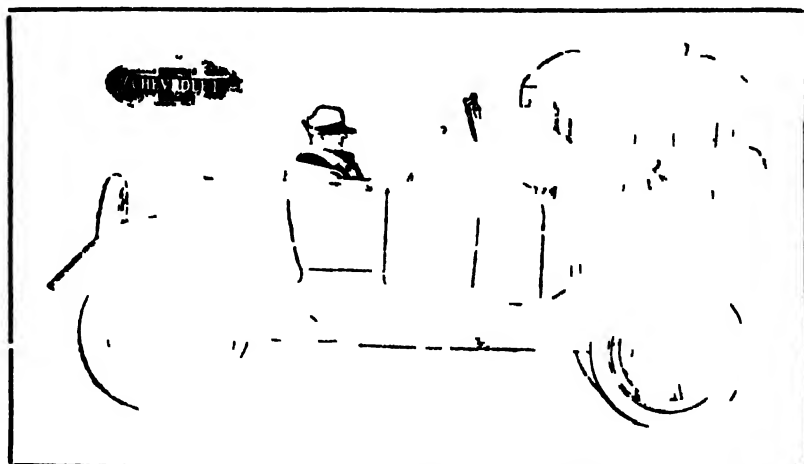
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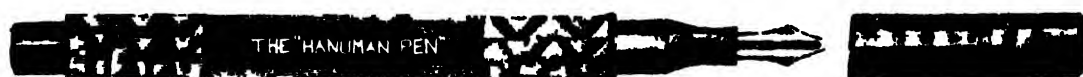
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To Contributors We invite contributions from all persons interested in the interests of Commerce and Industries. Contributions should be sent to the Editor, "Commerce and Industries", 19, 2nd Line Beach, Madras. Contributions should be sent to the Editor, "Commerce and Industries", 19, 2nd Line Beach, Madras. Contributions should be sent to the Editor, "Commerce and Industries", 19, 2nd Line Beach, Madras.

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"Commerce and Industries"

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“COMMERCE & INDUSTRIES”

Vol III

MADRAS, JULY 1920.

No. I

HOW THE WORLD MOVES.

PATENTS AND DESIGNS

THE Annual Report of the Patent Office for the year 1919 shows that the work received during the year exceeded the highest pre-war activity by more than 30 per cent. 1059 applications for Patents and 884 applications to register designs were made in 1919 against 611 and 1411, respectively in 1918. Of the 1059 applications, 726 came from persons in foreign countries against 412 in 1918 and 513 originated in India only 41 (against 77 in 1918) being by inventors who are purely Indian names. Those from other residents in India number 200 against 155 in 1918. The inventions in India relate in particular to the devising of water lifts, waste preventing water taps and thief proof fastenings for doors and axle boxes of railway wagons. The progress so far achieved, though slightly better than the preceding year, cannot be said to be very encouraging and denotes the lack of inventive power in the Indian brains which is mainly due to the exceedingly defective and out of date methods of education, training and facilities accorded to the Indian youth. It speaks volumes of the kind of treatment that is accorded to the young Indians in the fields of industry and commerce. When it is the short sighted and settled policy of education in India to train Indians as merely labourers and workmen to handle the tools but not as

engineers and captains of industry, it is in the natural course of things that the Patent office in India is bound to be overflowed with application from all the other parts of the world whose young men are better trained and looked after not as tool users but as tool makers and builders of engines and machinery both for themselves and for the purposes of export. The economic crisis, though more acute in India than in other countries, is less felt than elsewhere, because the people in other countries can make their voice heard by the Government. It is due to the fact that a very small minority of the population in India has been educated whereas a great majority of the people in foreign countries received education together with all the benefits that can be conferred on the population by a scientific system of education conducted on efficient and modern lines that can successfully develop the latent faculties of the human brain. It is the absence of such education that has made the people here poor, dumb, disorganised and lifeless. When it is felt that the existing schools cannot make our young men skilled enough to take their places in the field of industry, it is open to the private enterprise to supply the want by opening suitable institutions without delay.

THE DEVELOPMENT OF THE AGENCY

The Agency tracts of the Ganjam, Vizagapatam and Godavari Districts covering an area of 20,000 square miles—equal to the area of four Tamil Districts—is a fertile and undeveloped reservoir of hills, forests and perennial streams varying in altitude from 500 and 5500 feet with a population of 20,00,000 inhabitants who are hill tribes, speaking a variety of languages connected with Telugu and immune from Malaria. Some of the important tributaries of the Godavari river as well as the Nagavalli, the Vamsadhara, the Ruskikulya and other streams have their source in the Agency and supply water for irrigation in the plains. The Agency contains many perennial streams and several large water falls from which it is quite possible to generate Electric Power on a large scale. Thus cheap power can be supplied to Vizagapatam which is destined to be a great Port and a great Railway Centre. As the rain fall is good and the soil fertile, a considerable surplus of food stuffs can be exported if skilled and industrious cultivators take to agriculture. These tracts are rich in minerals and valuable timber and export to foreign countries large quantities of forest produce such as myrobilans which could be largely used in the tanning industry in the South India. The forests yield large quantities of raw material suitable to industries such as paper and commercial alcohol.

The indigenous inhabitants, being uneducated and backward, have been unable to develop the resources. The only large public work hitherto undertaken is the opening up of a few through communications. The progress has been retarded by want of funds, shortage of labour and lack of trained industrialists. In view of the new policy of opening up the Agency to immigration from outside the Government of Madras have

appointed an Agency Commissioner to be in charge of the Agency tracts of Ganjam, Vizagapatam and Godavari, whose business is to plan and direct the necessary operations to develop and conserve the resources of these tracts for the benefit of the people of the Presidency and to welcome the entry of private capital and enterprise from outside. With the construction of the Vizagapatam Harbour, a great impetus will be given to export trade in the surplus produce of these tracts and to the development of several new industries requiring the utilisation of the vast quantities of the raw material. Thus, there is a great future in store for these Agency Districts provided the people realise the golden opportunities that are laid open to them in the fields of commerce and industry.

GOLD SOVEREIGNS

A news slip issued by the Publicity Bureau states that the rise in the price of the sovereign instead of a fall as expected is due to the rumoured export of gold from India to America by the Government and to the rumour that sovereigns hereafter to be coined are to be inferior in weight and fineness to the old sovereign. These rumours are contradicted. Under the tender system, Government sell large quantities of gold in India fortnightly for less than Rs 14 per sovereign which is also the price of a sovereign in foreign countries. The Government have also removed all restrictions on the import of gold from abroad. On the 21st July 1920, Government sold by auction under the tender system 1,295,500 tolas of gold in India at an average of Rs 22-0-11 per tola or Rs 13-13-6 per sovereign. The Government have announced that they intend to sell 3,750,000 tolas of gold on the 4th and 19th of August and the 1st of September. On 25th June last the price of a sovereign in England was Rs 13-12-4 against Rs 13-12-0 in New York according to the

exchange rate. The Government of India will fix the value of the sovereign at Rs. 10 to give effect to the recommendations of the Currency Commission and will make the sovereign legal tender for Rs. 10 only. The only noteworthy feature is that the Government of India did not and will not undertake to issue gold sovereigns in exchange for Rs. 10 in silver which is the only course to remove the public discontent and distrust. It is only then that the sovereign will gain popularity and rapid currency in India.

The European Industries

We have shown steady progress in recovering from the effects of war. There are good many reasons to hope that the low point in the economic existence of Europe has been passed. The European countries having spent most of their energy last year in replacing broken or worn out machinery and in restoring their depleted stores of raw materials are prepared to show heavy increases in their exports.

Electric Truck as a medium of Transport

Transportation is one of the most important, yet difficult, problems awaiting solution in all parts of the world. The success or failure of the export business depends largely on the speedy and successful means of transport at the docks and the terminals. Electric trucks are generally used throughout the United States at railroad and steamship terminals and have been known as efficient, economical and time saving devices. It is a kind of truck the top of which forms the loading platform. Underneath the platform are placed in electric storage battery and an enclosed low-voltage motor at one end. At one or both ends of the platform is fixed the operator's step on which he stands and applies the power through a controller lever. The truck runs on four solid rubber tired wheels. Lifting one foot from a foot controller operates as a brake and the motion is automatically stopped when the

operator steps from the truck. The cost of an electric truck or tractor with the necessary charging equipment, maintenance and all other expenses is considered less than the wages of two men. One operator can turn out the work of 6 to 10 times the work done by the old-fashioned trucks pulled or pushed by hand. A labourer of ordinary intelligence can learn in a few hours to drive a truck without any injury or damage. A single charge of a battery is enough to carry a full load of 2 tons from 15 to 20 miles. The fact that one man with an electric truck can transport 5 to 10 times the amount of goods at 3 times the speed without any fatigue demonstrates the economy of the system, especially in these days of labour troubles and difficulty in obtaining men for steady employment. From a commercial view point, it should be recognised that some of the most difficult problems confronting the operators in commercial enterprises in so far as they relate to transportation can be successfully solved by the Electric truck. As it offers a convenient mechanical medium, the use of the Electric truck will soon attract universal attention.

Modern Automobile Terms

Some of the best known and most popular types and styles of automobiles in use in the United States are the Coupe, the Sedan, the Limousine, the Roadster, and the Touring Car. Of these, the first three are of French origin while the last two are English. The prospective buyer of cars will do well to know the significance of these terms.

Originally, the word "Coupe" was applied to a four wheeled closed carriage for two persons inside, with an outside seat for a driver. It is a French word meaning "to cut" and is so called because it gives the appearance of a larger carriage cut in half and is subsequently applied to the present closed car with one seat in the rear, a driver's seat and an auxiliary seat.

The word "Sedan" is one of the oldest names applied to a vehicle of transport and derives its origin from the French City of that name. The first Sedans originally were portable closed chairs carried on poles by two men which were extremely popular in England and are used in China and India. The modern "Sedan" car has an enclosed body and accommodates seven passengers and is popularly known as all purpose family car.

The term "Limousine" was originally the name of a cloak worn in France and originated from Limousine, the name of an old province in Central France. It is now used to the chauffeur driven car with an enclosed compartment, with the driver's seat outside but covered over by a roof.

The word "Roadster" was originally applied to vessels that worked their way by means of the tides. Subsequently it is used for bicycles. The modern "Roadster" has an open body designed primarily for two persons. Of late, the four door "Roadster," accommodating four passengers has become popular.

The most familiar family type of car is the "Touring Car" which is so called because it is used on lengthy tours. It is an open car with a tonneau and four doors seating seven passengers in the case of the largest cars.

Australian Business Prosperity

Trade has considerably increased. The spending power of the people is on the increase as also wages throughout the commonwealth. The large fortunes made by the producers and the middlemen are due to the sales of Australian products at high prices. The Savings Bank Deposits now amount to £ 130,000,000 which is an increase of £ 46,000,000 during the past 5 years.

Advertising Methods

It should be recognised that those who maintain a policy of steady advertising make the greatest progress in all enterprises of industry and trade. Advertising is mainly a problem of selling and must be studied in all its aspects. Advertisers must make a careful study of the habits and temperament of the people, their social and commercial life and of the methods of distribution in vogue. In many large cities of the world, poster advertising is in great favour. Bill boards are put upon buildings and at railway stations. The method of poster advertising is very effective especially for low priced articles of popular consumption. Advertising in newspapers and magazines is also very effective. Advertising in technical papers is productive of much value especially for the principal branches of industry such as agriculture, machinery, textiles, chemicals, and electrical goods. Direct advertising by circular letters and folders will also prove useful in order to explain the features or describe the workings of a particular article. Some of the modern methods of advertising are window displays, illuminated signs and motion pictures.

Industries in Madras

At a Conference held in the Council Chamber of Fort St George in March last, His Excellency the Governor presided and expressed the belief that when the financial and economic conditions of the world settled down there would be a great development of industry in India, particularly in the Madras Presidency. He believed that the Departments of Industries, Agriculture co-operation, Forests and Fisheries should co-operate more closely with one another with the advice and co-operation of the non-official representatives of the Madras Presidency.

Pottery Industry

It has been stated that the McKinley Tariff

killed the British Pottery trade with the United States which has again become one of the best customers for earthen ware goods of superior quality. British earthenware is considered the best in the world and America has been placing substantial orders with the Staffordshire, the demand being for cheap and more useful class of articles required for general domestic use. Much of the decorative ware is being taken by hotels that are finding it difficult to obtain large supplies. This industry in India requires to be conducted on a more organised scale.

Coal for Industrial purposes -In England, the scheme for grading industrial coal, is reported to have made excellent progress and the good results are attributed to the fact that the grading plan was conceived and carried out by business men in a business like way but not by bureaucrats, the object of the promoters being to find out by actual experiment and investigation what class of fuel is most suitable to various industrial purpose and so to adjust matters that each industry gets exactly the quantity and the quality it requires. The main object of this scheme of fuel distribution is evidently to prevent waste and to conserve the British coal supply by ensuring that full economical value is obtained for every ton of coal used by manufacturers.

Economy in Municipalities

Swedish creosoted blocks for street paving, now cost £ 50 a thousand while the previous rate is £ 8 a thousand. To save the expense of buying new blocks Westminster City Council is paying 30s a thousand to get old ones cleaned for reuse. This example of economy coupled with patriotism is commendable to the extravagant Municipalities and Corporations in India who ought to be more discriminate in utilising the wealth of the tax payers.

Politics and Trade Unions

While discussing the question of the legality of the use of trade Union funds for purposes connected with a strike for a political object Mr. Fred Bramley, Assistant Secretary to the Parliamentary Committee said "It is very difficult to draw a line of demarcation between Industrial and Political questions, and I would not waste my time in an attempt to settle it. It is quite impossible to say what is an industrial and what is a political issue. If the line of demarcation is going to be so sharply drawn no union can incur expenditure in influencing the Government to promote legislation on hours and working conditions. The Shop Assistant's Union, for instance, could not use its money to bring pressure to bear on the Government to promote a Shop Hours Bill, nor could we use trade Union funds to get the Factory laws amended." Thus, in England, it is asserted that it is not illegal for a Trade Union to finance a strike for political purposes. The issue involved in the matter under reference is whether they can render financial and other assistance of the members of the Trade Union movement who may be dismissed or thrown out of work by refusal to handle munitions intended for use in Ireland or elsewhere for consideration of their own.

The Lace and Knitting Industry

It is welcome news for the Nottingham lace and hosiery manufacturer that prices of certain valuable raw materials have shown a downward trend for there is a big demand for silk yarn in the local market now that silk lace is fashionable. Silk yarns enter very largely into the make up of textiles and a falling market in raw materials means an increasing demand for the finished article. Nowadays, anything that tends to a reduction in prices is something to be thankful. As regards India, it is high time to organise an Association

of all the hosiery manufacturers who are scattered all over the country with a view to finance, wherever possible and to develop hosiery as a cottage industry for which there is a very profitable market in these days of high prices of imported goods. On the other hand, it will be the means of creating at least a hand to mouth existence to the cottage workers in these famine days.

The British Empire Exhibition With the aid of an influential committee headed by the Prince of Wales as the President, the first exhibition will be held in London in 1923. Government assistance will be asked for and guarantees to the extent of £ 500,000 are expected with the support of the Board of Trade, the Dominion High Commissioners, the Agents General, Bank, Insurance Companies, Shipping firms and other commercial interests.

Madras Trade and Industry During March 1920, it has been reported that 2651 cars were imported into British India of which 2556 came from the United States and only 68 from the United Kingdom. Out of the 79 new companies registered during April last with an authorised capital of about Rs. 1874 lakhs the largest flotation was that of the British India Banking and Industrial Corporation, Ltd. of Bombay with a capital of Rs. 10 crores whose Directorate includes 2 prominent Madras businessmen. The Joint Stock Companies started for tanning and finishing leather for the manufacture of boots and shoes with a view to compete with imported goods propose to bring in experts from Europe and America to train and supervise Indian workmen. In order to protect this industry of increasing importance, it is expected that the Government might raise the import duty from 72 per cent to 15 per cent. As regards the tariff question, the report of the Committee of officials and non-officials on Imperial preference and the future

fiscal policy of India points to the conclusion that India will neither gain nor lose by adopting a moderate preference on Import Duties. The appointment of a Commission to investigate into the question more exhaustively from the Indian point of view has been recommended. Opinion is unanimous that Indian Industries ought to receive adequate protection. Indian Commercial opinion is decidedly in favour of protection of Indian Industries. It is quite probable that this question of serious importance to the Indian Industrial and Commercial interests will be left to the final decision of the new enlarged Legislative Councils. It may be that the raising of the present import duties against foreign nations would raise the prices of imported articles to the detriment of the consumer. In the best interests of the indigenous industries, a considerate policy of protective tariffs is absolutely essential.

Burma According to a Press note issued by the Government of Burma, the estimated surplus of the Burmese rice crop available for export for the current year is fixed at 1,800,000 tons of cargo rice. The total area of the reserved forests at the close of the year amounts to 29,116 square miles which is practically one fifth of the total forest area of the province, exclusive of large tracts proposed for reservation. The demarcation of forest boundaries was in progress. The total area of the reserved forest for which working plans have been sanctioned is 19,832 square miles while rough schemes for girdling and felling have been prepared for another 7,730 square miles, leaving 10,511 square miles of reserved forest for which no working plans for girdling have been prepared besides 88,681 square miles of unclassified forests. The progress of the successful and economical exploitation of the forests has been impeded by want of working plans and large scale maps with superior forest establishment. Over 72,000

tons of timber of different species were sent overseas for military purposes between the 13th April 1917 and the 30th June 1918. It is understood that business in Rangoon has been very dull owing to the fall in exchange, the advent of rains and the bazar being heavily overstocked.

Ceylon Messrs. Tata, the promoters of the Sugar Corporation recently floated for the cultivation of sugarcane and the manufacture of sugar are in communication with the leading Ceylonese firms in Colombo regarding the feasibility of cultivating sugarcane in Ceylon. Owing to the scarcity of supplies of sugar, orders have been placed in Australia and elsewhere for supplies and prices at present vary largely, the lowest being Rs. 116 per bag of 2 cwt. Large shipments from Java are expected which will lower the price to about Rs. 90.

The sale of Kandyan Estate of about 680 acres yielded Rs. 6,15,250. Owing

to the serious shortage of chocolate and cocoa which is experienced throughout the world, it is proposed to start a chocolate manufactory in Ceylon where both chocolate and cocoa will be manufactured both for local consumption and export. It is understood that a plot of about 5 acres of land at Peradeniya junction has been purchased and the construction of the up-to-date factory will begin shortly. The latest machinery is expected from England in a couple of months. Besides cocoa and chocolates the manufacture of sweets also will be taken up in due time and the concern is expected to be a grand success.

Germany will shortly resume trade with Ceylon in all kinds of goods except machinery. German goods are no doubt of superior quality but the prices quoted by German firms are much higher than pre-war days. Prices are now quoted C. I. F. to facilitate business. Samples of lead pencils, cigarette cases and other sundries have been sent by German firms who propose to exchange Ceylon plumbago, rubber etc. At present Japan has a good hold over the market with her cheap but inferior goods. According to the report of Mr. J. W. Mooney, Electrical Adviser to the Government of India, Ceylon has far more water power than she can use, unless large industries are started for the utilisation of this natural wealth which is now estimated at about 264,000 hydroelectric horse power.

Our-selves—We have to specially request our numerous reader and advertisers to overlook the delay that has been again caused in the publication of this issue with a spirit of toleration under the existing difficult circumstances. The printers having assured us that they will be able to regularly proceed with this Journal we are greatly relieved to pass this assurance on to our many constituents. With a view to make this Journal increasingly useful, it has been decided to issue it from the next month as a fortnightly on the 1st and 15th of every month, the size being doubled. No change in the amount of the annual subscription is contemplated at present.

REVIEWS.

Britain and India "deals with important problems affecting the interests of India and Britain and continues to maintain a high standard of excellence in appearance and interest. The June Number contains, among

others, interesting articles on "Aristocracy and Democracy", "Co-education", "Nursing is a profession for Indian Women" and a Report of an interview by the members of the Burmese Deputation from the pen of the

Editor claiming Self Government In the course of the interview, it has been elicited that Burma, possessing as she does vast resources in mines, oils, forests and a large rice producing country, and united by one language and religion, wishes to be included in the Indian Reform Scheme to enable her to advance with India. The members of the Deputation complain that both exports and imports are monopolized by Europeans and conclude by remarking "At present very little is done in our interests, but much in the interest of the foreign exploiter—for Burma is rich, rich in many things, and their richness we would turn to our peoples benefit. We have come hoping to gain a hearing, but, alas! the public here knows little or nothing of us, and we thought they knew so much. Those in power are sympathetic, but do not seem ready to help us."

Utilisation of Bitterns The second bulletin of the Department of industries, Bombay, is a very useful record dealing with the production of magnesium chloride which is the result of the investigations made by M. A. J. Turner, B. S. C. (Hon.) F. I. C., Head of the Department of Technical and applied Chemistry at the Victoria Jubilee Technical Institute, Bombay. One of the articles of great importance to the textile industry used in the process of sizing is magnesium chloride. Its price rose up to Rs. 45 to 55 a cwt from Rs. 38-0 in July 1914. It has been demonstrated that, owing to the dryness of the air in Khuraghoda, the richness of the bitterns in magnesium salts and the improved manner of working, Khuraghoda is considered the best centre of industry which can supply the needs of India as well as that of other countries. The Director of Industries observes that though this Indian product is cheaper than the imported article the majority of the Bombay cotton weaving mills still use the foreign product which is strange indeed!

The Scientific World This is a fortnightly magazine published in Lahore containing very useful and valuable information. The issue of the 1st July 1920 contains such original articles as the value of Bye-products in an industry by Prof. Ram Bheja Mal Seth, M. S. C. the Teaching of Physiology and Hygiene in Punjab Schools by Prof. K. L. Bhatia, M. A., B. S. C. and a note on Textile Industry by Mr. L. Shiv Das Khanna, besides scientific notes and extracts and comments. This journal supplies a long felt want in the field of scientific knowledge the value of which is being seriously felt in these days of industrial and chemical development.

Inland Trade The Annual Report on the Inland Trade of the United Provinces of Agra and Oudh for the year ending 31st March 1919 shows an increase in the volume of the rail borne traffic by 58½ lakhs of maunds by weight and 2,162 lakhs of rupees in value as compared with the previous year. The improvement is due to the large increase in the imports of grains and Salt. One noteworthy feature is the decline in the imports of "piece-goods, foreign" by 193 thousand maunds and an increase in the Indian piece-goods and Indian yarns by 128½ and 41 thousand maunds respectively. Grain and pulses were largely imported in the year from the Punjab and Bihar and Orissa. The Province imported rice to the extent of 6,265 thousand maunds which is an increase of 387½ thousand maunds over last year, of which 2417 thousand maunds of Burma rice came from Calcutta, 1,987 thousand from Bihar and Orissa, and 1,639 thousand from Bengal. The imports of oilseeds, the largest on record, amount to 14½ lakhs of maunds against 8½ lakhs of maunds in the previous year. Salt to the extent of 6,670 thousand maunds were imported of which the larger part came from Rajputana and Central India. The imports of sugar amount to 26½ lakhs which

came largely from Calcutta. The total exports of oilseeds amount to 60½ lakhs of maunds, a large part of which went to Calcutta. The internal rail borne trade advanced from 360 lakhs to 382 lakhs of maunds, the increases being under fodder, grain and pulse, unrefined sugar and wood. There is also a general improvement in the imports and exports of the river borne traffic.

Foreign Trade. The annual report on the foreign trade of the United Provinces of Agra and Oudh with the countries of Tibet and Nepal for the year ending 31st March 1920 shows that the cost of registering the foreign trade for 1919-20 including the pay and travelling allowance of the inspector and his peon amounted to Rs. 18,128. The value of the total foreign trade of the province has risen by Rs. 41,17,404 though there is a drop in volume by 2,75,936 maunds. The chief articles of import from Tibet are borax, salt and wool. The export trade to Tibet consists chiefly of cotton goods, grains and sugar. The exports to Nepal which increased by 38,832 maunds consist chiefly of cotton goods, fruits and vegetables, grains, metals, spices, sugar and tobacco but there is a decline in the exports of Mohur and Salt.

Indian Mints. According to the Reports on the Administration of the Mints at Calcutta and Bombay for the year 1918-19 the value of gold acquired during the year at the two Mints under the Gold Import Act of 1917 amounted to Rs. 2,94,872 against Rs. 18,36,66,547 in the previous year. A consignment of 1,500,000 sovereigns was received at the Calcutta Mint from the Commonwealth Bank, Sydney, which were coined, under an arrangement in exchange for gold bullion shipped to Australia from the gold holdings in the Currency Reserve. The total value of bullion and foreign coin shipped abroad on this account and on account of the

payment made in gold to the United States of America for silver received therefrom under the Pittman Act amounted to Rs. 5,32,94,147. Gold coin and bullion valued at Rs. 1,24,79,691 were issued to the Indian States in exchange for Rupees. Consignments of gold from the Indian Mines were continued to be received by the Bombay Mint for safe custody on behalf of the Bank of England. South African gold worth Rs. 1,671,658 held at the Bombay Mint for safe custody was shipped on behalf of the Bank of England. One important event during the year under review was the opening of a Branch of the Royal Mint at Bombay to coin sovereigns in India. Coinage actually began in August 1918 and 1,295,372 sovereigns were coined. Power was taken by legislation to coin in India gold mohurs of the same weight and fineness as the sovereign and 2,109,703 pieces of the new coins of the value of Rs. 3,16,45,545 were struck at the Bombay Mint. The quantity of silver coined at the Mints was of the nominal value of Rs. 52,05,35,309 which is the heaviest on record. Uncurrent coins American dollars and other silver made over by the United States under the Pittman Act was utilised for silver coinage. The Bombay Mint turned out nickel one anna pieces of the nominal value of Rs. 50,43,279, in addition to 872,069 nickel five millime pieces valued at Rs. 67,041 on behalf of the Egyptian Government. The two Mints turned out 85,990,658 nickel two anna coins of the value of Rs. 1,07,48,832. The Calcutta Mint coined bronze coins consisting of pice, half pice, and pie pieces of the value of Rs. 20,10,600, besides Rs. 52,500 worth of copper cents for the Straits Government and Rs. 1,20,450 worth of bronze pennies and half pennies for the Australian Commonwealth. The tale of coins minted at the Calcutta Mint was 545,996,049 while that at the Bombay Mint was 356,405,149.

including 2,109,703 gold mohurs. The amount of coinage executed at the two Mints is considered the heaviest on record. Owing to the large consignments of dollar silver from America, experiments to refine a portion these consignments were carried on. The

first experiment was not reported to be satisfactory but the subsequent experiments proved more successful, the method adopted being that of melting silver in ordinary plumbago crucibles with potassium nitrate

BANKS AND BANKING

The Bank Rate July 1920	Per cent
Bank of Bengal since 1st July 1920	5
Bank of Bombay since 29th June 1920	5
Bank of Madras since 18th July 1920	5
Bank of England since 15th April 1920	7
Bank of France since 8th April 1920	6
Bank of Germany since 2nd Dec 1914	5
Bank of Russia since 18th July 1914	6
Bank of Italy since 12th May 1920	6
Bank of Netherlands since 1st July 1915	4½
Bank of Belgium since 28th April 1920	5½
Bank of Austria Hungary since 10th April 1914	5
Bank of Sweden since 1st March 1920	7
Bank of Spain since 10th Nov 1919	5

Gold in India. Mr Hindlay Shirras, lecturing before the Royal Statistical Society, estimated that India's net absorption of gold in the last quarter of a century had been £ 214,770,000 and that the stock of gold at present was 9½ million five ounces, equivalent to over 5 times last year's world production. Such absorption is bound to continue so long as India is denied scientific and technical education, greater banking facilities and adequate and easier transport. He urged that the matter of keeping a large reserve of silver in India should receive most careful consideration. But, what about gold? Gold coins should be minted in India and issued by the Government in all Government treasuries and banks on demand in exchange for silver or currency notes so as to prevent illicit trading in gold sovereigns and to accelerate the free circulation of gold as a form of international currency as in other countries of the world.

A State Bank for India. The hoarding evil which is prejudicial to Indian interests is ac-

centrated by the absence of adequate banking facilities so that the opposition to the Imperial Bank of India Bill in the last session of the Indian Legislative Council is to be deplored, says a contemporary. In spite of the fact that the proposed scheme involves the opening of a hundred branches throughout the country within 5 years of its inauguration, Indian commercial opinion even in Bombay, is decidedly in favour of having a State Bank instead of the proposed amalgamation of the Presidency Banks. According to Mr Otto Rothwell, Registrar of Co-operative Societies in Bombay, there are yet many districts in the advanced Bombay Presidency where not a single bank is in existence. Economic conditions remain medieval, cheques are not used because they cannot be cashed, even notes are not yet used sufficiently and the merchant carries chests of silver or gold coin to pay his customers in some wretched district which is left without a bank. What is the cause of the wretchedness? It is because they are not given proper education and banking facilities. We are sure that a State Bank will become a thousand times more popular than the Amalgamated Bank, though it is too late to think of it now.

Bank of Taiwan.—At the Forty first General Meeting of the shareholders, held at Tokyo, of the Bank of Taiwan, Mr T. Sakurai, the President, said "Of the foreign trade, an enormous increase in the export of raw silk to U S A greatly neutralised the adverse trade

balance, and new enterprises or their expansion showed such high levels as never attained before, with the accompanying result of the activity of the stock market, and therefore the money market showed extreme tightness, owing to the keen demand, and despite the large import of gold from U S A the money rate soared so high that it showed an unparalleled record in recent years and thus passed the year. With regard to the exchange with China, the high price of silver, its scarcity and tightness of money incessantly troubled our exchange business with that country. As to the Indian exchange, owing to the increase in the Council Rate for several times, the rate of exchange fell down a great deal, furthermore the decrease of our export and the heavy increase of our import of cotton kept us in distress in offsetting the exchange balances, while our exchange with Southern Islands tended toward an unfavourable tone on account of the decline of our export and our import of rice and sugar, but the rate of exchange remained without much fluctuations except on Singapore. * However, we were fortunate enough to have conducted our business with satisfactory results, recording a total turnover of yen 1,371,000,000, an increase of Yen 419,000,000.

Osaka Bank A great blow to the general economic situation has been caused by the temporary closing up of the Yokohama Silk Exchange which is due to the closure of the Seventy fourth Bank of Yokohama. The capital of the Bank is 5,000,000 Yen of which 3,150,000 Yen was paid up, the deposits amount to 60,000,000 Yen and the loans to 70,000,000 Yen.

Bank of Bengal The Directors of the Bank of Bengal have declared a dividend of 17 per cent per annum for the half year ended 30th June 1920, the profit available, including Rs 5,25,442-04 brought forward from the

previous year amounting to Rs. 31,21,071-11-0 approximately.

Bank of India The Directors have declared an ad-interim dividend of 14 per cent per annum, free from incometax on the paid up capital of Rs one crore, the net profits for the half year ended 30th June last amounting to Rs 11,82,978 13-10 after deducting Rs 1,30,000 for depreciation of securities and Rs 1,70,000 for income and super tax.

The Mysore State Industrial Bank This Bank is floated with an authorised capital of Rs 5 crores divided into shares of Rs 50 each, half the capital being called up at once. The Bank will do banking business of every description, besides promoting the Financial and Industrial development of the State. The amalgamation of the Bangalore Bank with this new Bank is under contemplation.

The Mysore Loan The Mysore Government Loan of 1920 has been issued at Rs 99 and repayable at Rs 100 on the 1st October 1940. The loan carries interest at 6½ per cent free of Incometax. This loan has been raised with a view to secure funds to finance a number of capital works as the Dewan said. 'We wish to raise the loan simply and solely because we wish to develop the resources of the State at a rate much quicker than would ever be possible with the aid of the surplus revenues of the State alone.'

The Hongkong and Shanghai Bank Limited An interim dividend of 6 per share subject to deduction of incometax has been declared for the half year ending 30th June 1920, payable on August, 9th.

The Tata Industrial Bank Ltd A Branch office was opened on the 5th July, 1920 at Bassin to transact banking business.

The Bank of Baroda The Directors have declared for the past half year an ad-interim dividend at the rate of 12 per cent per annum free of Incometax on the paid-up capital, the

net profits amounting to Rs 4,83,461 6 6 inclusive of Rs 59,639 5-6 brought forward from the previous year

The Central Bank of India Ltd An ad interim dividend of 14 per cent has been declared for the past half year, the net profits amounting to Rs 8,71,466-14 11 including Rs 52,661-2 7 brought forward from the previous year. The authorised capital of the Bank has been increased from one to Rs 3 crores

Municipal Banks A proposition is set on foot to start a Municipal Bank in London on the lines of the Municipal Bank of Birmingham which has been working successfully, since 1916, recording at present a total deposit of £ 1,000,000 from 50,000 depositors. The bank allows 3½ per cent to depositors and lends to the Corporation at 4 to 4½ per cent. This example is commended to all Municipal Corporations in India with a view to encourage the habit of saving among the wage earning classes. This will stimulate local patriotism, besides increasing the financial resources of the local authorities

The Indian Bank Ltd, Madras. The Directors have declared an ad interim dividend of 9 per cent free of income tax for the half year ended 30th June, 1920. The net profits for the half year amounted to Rs 1,24,543 10 6 excluding Rs 9,396 4 0 brought forward from the previous year. A branch will be opened at Cochin very shortly

The Union Bank of India Ltd, Bombay

According to the Statutory report of the Directors, the total number of shares allotted is 8,00,000 of the value of Rs 4,00,00,000 the amount of cash received on application and allotment (at Rs 78-0 per share being Rs. 59,45,940

The Industrial and exchange Bank of India Ltd, has been started with a capital of Rs 5,00,00,000 divided into 50,00,000 ordinary shares of 10 each of which Rs 10,00,000 shares are now offered for subscription. The Bank is managed by Messrs Khosla & Co 7a, Fort Street Bombay, and will transact business of banking, of all branches, besides promoting and financing industries and business undertaking

The Punjab and Sind Bank Ltd A dividend of 9 per cent has been declared for the past half year out of the net profit of Rs 79,413 3-9 which includes the balance brought forward

The Co-operative Hindustan Bank This bank has been working at a loss for the past ten years, ever since it was started in 1909. Owing to great mismanagement, an application for winding up was filed. But, the situation was saved by Babu Brajendra Kishore Roy Choudhry and the Maharajah of Coosimbazir who took over the management at great self sacrifice, and after writing off his debts to the extent of Rs 2,80,000, have now come forward with a profit to declare the first dividend to the share holders. Great credit is due to the enterprise of Babu B K Roy Choudhry in having revived the Bank and making it a success

IMPORTANT NOTICE

COMMERCE & INDUSTRIES

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A MUCH NEGLECTED FIBRE.

(By "DAMU")

FROM the beginning of history we read of the use of fibres and it is an interesting fact that the kinds most favoured in ancient times—such as flax, cotton and hemp are identical with the most valued commercial fibres of the present day. India is renowned for the great antiquity of her fibre manufactures and the Government have made occasional attempts to determine the commercial and industrial possibilities of the numerous fibre yielding trees, plants and shrubs that abound in this country. For the first time a Government Committee was appointed in 1900, and all available information was collected. Then it was found that the committee had only devoted their attention to some of the most common fibres, such as jute, coconut, rhea, agave, plantain, etc., and that these do not represent an exhaustive list of Indian fibres whose number is very considerable. There were fresh facts to be elucidated. The Indian cultivator of to-day (and he is the degenerated type of his ancient sire) knows very little of the commercial value of many of the fibrous plants. He has yet to learn how some of these fibrous plants can be profitably brought under systematic cultivation and how they can be successfully treated either by hand or mechanical process on a scale that can be considered as commercially successful. Another investigation was found necessary and it is over a year since the Government of India have put Mr. Finlow to this work. The present investigation will cover a period of not less than two years, and this time we have no doubt, a thorough exploitation will be made into the fibre possibilities of India, inasmuch as the subject is deserving of the fullest investigation as to its merits as an additional mainstay for this country of an agricultural people.

As has already been mentioned, India produces a large number of fibres, and most of them can be put to some economical use or other. Of all these fibrous plants there is perhaps none so common and yet so much neglected as the swallow wort, botanically known as *calotropis gigantea*. Familiarity is said to breed contempt and there is no clearer proof of man's propensity to be guided by this proverbial dictum than the way in which he has neglected this humble fibre yielding plant. The seed floss of this plant has long been known to the trade as "kapok", which is a *Malayan* word for the silk cotton used for filling pillows, cushions and upholstery of every kind. Long before the war the German textile manufacturers in their quest for cotton substitutes hit upon this product, and since then the price of this substance has been mounting up steadily in the foreign markets. In India for a long time the people knew some of the uses this was put to, but it was a revelation to many when they were told that the resourceful German had discovered a method of treating it to make it spinnable. The yarn obtained was described as having a peculiarly soft, silky feeling, and it was with a view to have a good supply of "kapok" for themselves that the cultivation of this shrub was introduced into German East Africa and New Guinea. With the outbreak of the war, some interesting experiments were also made in England regarding the use of "kapok" as filling material for life belts, waist coats and other life saving appliances. These experiments showed that, in addition to the seed floss of this plant, its stem fibre could also be profitably used. This stem fibre resembles European flax and has remarkable resistant properties, an experiment with a three-strand one-eighth inch cord having stood a strain of

552 lbs This was found to be the strongest fibre obtainable from any plant on this side of South India Take for instance the case of one of the well known fibres of South India, the cocoanut fibre This breaks under three-hundred pounds, and the aloe fibre which comes next in rank breaks under three-hundred and fifty pounds There is thus clear proof that the "kapok" fibre is the strongest of all For this reason alone this plant fibre ought to fetch a very good price in the European market, if only a steady and continuous supply could be guaranteed Another advantage this plant has over other fibrous plants and trees is that there is absolutely no difficulty in getting the fibre out of its stem Only you will have to peel away the bark and it is so full of fibre that all you have to do is to tear it into small, thin strips

Thus much in regard to the economic value of the stem fibre and the seed floss of the swallow-wort We shall now give an account of the plant itself The swallow-worts are plants belonging to the natural order of *Iscladopachne* These are divided into two species, *C Gigantea* and *C Proctora*, the former wearing purple flowers and the latter white ones *C Gigantea* is an erect, spreading perennial shrub growing plentifully on waste lands in Bengal, Assam and the Madras Presidency It is also very largely found in Ceylon, Singapore, the Malayan Peninsula and China *C Proctora* is a slightly smaller plant growing in dry tracts It is found plentifully in the sub-Himalayan region stretching from the Indus to the Ganges It is also found growing in great abundance in Central India, Rajputana, the Deccan and Upper Burma The vernacular name of both the species is *madar* The English name of the plant is also *Madar* It is known as *Eriku* in Malabar and the West Coast, and in Mysore it is known as *Eriukum* in the Canarese dialect So far as the textile and other economic pro-

perties of the plant are concerned, both the species are brought under the common name of *Calotropis* Watts gives a brief account of this plant in his "Economic Products of India" He says that one of the earliest European writers to describe this plant was Prosper Alpinus Rhede was the earliest Indian botanist to narrate the properties of the *Madar* He calls it *aria* Rumphius gives an account of this shrub and he calls it *madar* *Isca* is the name given to it by Jones Roxburgh placed it under the genus *Isclapias* and it was Robert Brown who assigned to it a separate place under its present name *Calotropis* The Arabs knew this plant in ancient days as *Ushar* while the Persians called it *khark* Abu Hanifeh is believed to be the first Arab writer who gave an account of the economic uses of this plant, though for more useful and detailed information we have to look into the writings of Ebu Baithar While in modern days it was the German who discovered the use of the seed floss of this plant for textile purposes, it is interesting to note that in India in very ancient times it was being used as a textile material For this we have the authority of Davy who in his Persian—English Dictionary says as follows — "It is now well known that the coma of hairs or floss from its seed-capsules forms one of the so-called vegetable silks or silk-cottons which have been extensively used in India from the remote times in the manufacture of silk-cotton textiles, and in stuffing quilts, pillows, and cushions for the purpose of making these latter very cool and refreshing" Caesar Frederike, writing about 1563-7 A.D. also refers to "a kinde of silke which groweth among the woodes without any labour of man, and when the bole thereof is growen round as bigge as an orange then they take care onely to gather them" Again there is the testimony of Ralph Fitch, a traveller who visited India about the year 1585 A.D. Referring to this plant, he speaks of "great

store of cloth which is made of grasse which they call *Yerua*." This word *Yerua* is evidently a corruption of the vernacular names used for this plant in many parts of South India even to this day. All these facts go to show that the economic value of this shrub was not unknown to the people of this country in ancient days. The drawback however was that, on account of the profuse way in which Nature has allowed this plant to grow in this country, people, we mean the present generation, began to look upon it as a useless growth and totally neglected it. No wonder to-day we take the various uses to which the floss of this plant is put to by the foreigner as revelations.

Now, it should not be supposed that this plant has no economic properties other than those mentioned above. The Hindus consider it a very sacred plant and they associate it with the observances of the *manus*, the demi-gods of Rudra or Shiva. So also the ancient Arabs appear to have superstitious notions about it. There is a popular account, still current among the people of this country, that the great Emperor Akbar was so named from having been born under the shade of this shrub. There is an account of this plant given in the *Talif i sharif*. It is said therein that this plant enjoys a high repute among the Indian medical practitioners. A French Ethnographer, by name M. Cl. Huart, says that the plant *Calotropis Procerus* appears to be used in the rain producing ceremony of the Pre Islamic Arabs. Dr. Dymock says that in the Vedic period the leaves of the swallow-worts were used in the worship of the Sun. Why, even to-day in Bombay the *Muruts* (Sun) are worshipped on Saturdays with the offering of wreaths made of the flowers of this plant. According to the Hindu medical science, almost all parts of this shrub could be turned into good account. Take the rind of the outer crust of the root of this plant, pulverise it and make it into an ointment. This will serve as

an effective cure for any kind of obstinate ulcer. Its root bark finely powdered can be successfully used for any kind of ring-worm. Small pieces of its root cut an inch in length are used as excellent medicinal toothbrushes. It is said that the wild tribes living in the Indian forests make a fine medicinal liquor out of the flowers of this plant. This liquor is believed to be very health giving and a preventive against intermittent fevers. Another very important use to which the root of this plant may be put to is in the manufacture of charcoal for gun powder. The milky juice of this plant mixed with lac is considered to be very good for dyeing leather and the Indian cobbler, in outlying parts of the country, is in the habit of largely using it. Again, the juice, when dried in its proper way, appears to act to some extent as a substitute for gutta serena among the villagers.

It seems a pity that such a useful plant is thus cruelly neglected by the Indian cultivator and the Indian industrialist. As regards cultivation, all that need be said is that it requires no systematic cultivation. It is quite an accommodating shrub in the tropics, in that it grows wild in any soil and in any weather. No attention need be paid to it when once it is made to grow. All that it requires is plenty of light, and this is assured for it in the tropics. It would almost seem as if Nature has made provisions for man's probable neglect of this plant, for the seeds of this plant have been provided with wings by which they are blown about by the wind. This accounts, in spite of the indifference with which it is treated, for the plant being seen to grow abundantly all over the country in a helter skelter fashion.

In the above we have given a fairly good account of the various economic uses of the *Calotropis*. Once upon a time this plant had a status of its own among the fibre-yielding plants and trees of India. Through sheer

indifference and continued neglect it has to day been relegated to a place of absolute insignificance by the people of the country, while the people of the West, having discovered its many economic uses, are trying all possible means to get all the wealth out of it. There is no reason why the people of this country should not take advantage of its fibre-yielding qualities. The seed floss of this plant,

or "kapok" as it is known to commerce, is already in large demand in the markets of the United Kingdom, the United States, and the Continent. Unlike other fibres, this fibre has great water resistant properties—and it is this particular property that has given this product an enhanced value in the markets of England and other continental countries.

THE WILL AND THE WAY

(By Mr K R Chary)

The young man who has made up his mind to succeed in life, and who is satisfied that he is on the right road to that end, must very seriously consider the extent to which he is going to use his will power. Will power is, perhaps, the first essential virtue in every undertaking. Will power is the lubricating oil that drives the human machinery. You can't run a machine for any length of time without oil. Human exertion won't last for any length of time either, unless will power and determination, ambition, and hope enter into the man and give him the means of easy running. Let that soak well into your brain and oil your thinking machinery.

The mere act of work and labour is of no interest to a man. It is the pleasure he gets out of it that counts. To see a thing grow and shape itself under the hand of constant toil guided by a Brain that plans and wills—that is what brings success.

It seems almost a hopeless task to bring the raw recruit to the prompt obedience and military precision of the experienced veteran. 'Attention!' rings out the drill sergeant. The awkward soldier does not know at first what to do with his hands, his feet, and his head. There is too much for him to do all at once. But he gradually learns to concentrate his thoughts upon the various commands, and

according to the intensity of his attention and will power are the celerity and accuracy of his motions. It is the will that makes the march to victory. It is the want of will that causes the panic and makes the coward.

Henry of Havre was a natural coward. At his first battle he fled ingloriously from the field of conflict. Then he sat in a ditch and shivered. He tried to pull himself together, and he thought something like this: 'This won't do. It's got to stop. I swear I will do better next time. In the next encounter, when fear began to make his teeth rattle and his hair stand on end, he shouted out, "Down traitorous flesh!" and stuck his spurs fiercely into his horse's side to be plunged into the thickest of the fight. Ever afterwards his white plume led the fight.

You, remember, also the case of Bernard Palissy, the French potter. He knew he was on the threshold of discovering the secret of the glaze on porcelain. Nothing could deter him from his purpose. When he had no more money left to buy fuel to heat his furnace, he began to strip his house. He went on and on, burning his household goods right down to the last chair. And at length success came. With trembling hands and burning head and starved body he tore down his

furnace and clasped a priceless treasure to his breast. He had the will to go on.

Take one more case. I like these illustrations because they remain longer with you. An eminent physician had been overworking himself. He did not feel bodily ill—only tired. But he began to feel his mind wandering. Now and again in the dark hours he saw strange shapes that kept haunting him. In his disordered condition they spoke to him, and made faces at him and put their hands upon him. When he wished to read they tried to close his eyes. When he tried to sleep they jibbered around him. He knew this meant insanity if he could not assert his will power to win against the feeling.

So he started in a simple, sensible way to combat it. He took a story book and commenced to read with the fixed determination in his mind not to skip a word, and to understand every line. He held his book before him and read steadily in spite of the gibes and jeers of the ghosts hovering around. He read a page. Then he had to fight the ghosts. He had only understood half the page. He read that half page again, and then did understand it, and so he went on day by day, each time increasing the number of pages he could read intelligently and he saw the shapes less distinctly, and heard the voices less clearly, and felt the pressure of their hands lighter, until the glad hour came when he was a free, sane man. That also, is what willpower does.

The will rules the mind. The will makes "I can" into "I will" and "I did." If your mind and your energy begin to waver, bring them both back again and again you will find it wonderfully easy in time. Every effort adds to some controlling Force. "I will" will make you think and pay attention to the thinking. "I will" will make you act and pay attention to the action. Will power is perhaps the greatest deficiency in the young man of to-day.

One young man—"Kentish"—writes to me: "I have recently noticed that you laid stress on the value of will power and concentration. Unfortunately, I am lacking in will-power and boldness. I also suffer from nervousness, and am addicted to blushing when obliged to talk with strangers. I am afraid this will tell against me, and cause me to be passed over when an opportunity for promotion comes along and this would be a great disappointment to me. I am considered a good hand, and have several times been selected for special work. If promoted I should be expected, to some extent, to control and supervise a body of men, and I am afraid that I should be considered incapable of controlling others when all the while I have so little control over myself. Perhaps I am rather too sensitive, however, I want to alter my condition if it is at all possible. Do you think I can overcome my difficulties by cultivation of willpower? and can you suggest a method which would bring about the desired effect?"

"Kentish"—if he reads this article carefully—ought to find some words of comfort. "Kentish" and all young men so afflicted, ought to remember that, if they want promotion, they must command and hold respect. The weak man will not obtain either. His authority is bound to be broken down. Whilst I do not hold with being severe and autocratic with those under you, I do hold with being strict and firm. I hold with the master being the master.

The weak-willed, nervous, blushing man cannot do his work conscientiously, or make those under him do theirs if they have a knowledge of his limitations. You won't be able to get over your troubles all at once. You will have to drill, drill, drill. You can't get rid of a twenty or thirty years' disease in a day. You will have to physic yourself. You must work hard. Certainly for months, perhaps for a year or two, you may make so little

progress that you will only see you have advanced by looking backwards

That is what happened to William Lloyd Garrison. He is one of the finest figures in humanitarian history. And yet I don't suppose you ever heard of him. You wouldn't, of course, being an Indian, nothing matters to you outside your own history book. I am not casting a slur on you. It is only because of the way they taught you at school. There they teach you the names of a lot of capes and points, and hills, and rivers, and lakes, and you forget them all within a week or two.

If they taught you the stories of many great men in foreign lands in an anecdotal way, and showed you on the map the field of their labours, I'll wager you would never forget them. Then schooldays might be passed without tears. But to return to Garrison. He was a good American. He hated the American slave trade. He was one of the first—the first of importance—to raise his voice against it.

In 1830, when he was bringing out the initial number of *The Liberator*, he was a slim, sickly youth of twenty-six and looked younger. He had just been discharged from Baltimore jail. We find him in a Boston attic, living on bread and milk, sleeping on the floor of his printing works, penniless and without influence and friends. Somehow or other he had scraped together a second-hand printing plant, on credit. And when he issued the first number of *The Liberator*, he had practically no subscribers. The only things he really did have were courage, will-power, and a cause for which to fight.

He wrote an editorial—this slim, sickly, penniless youth did—for his first number on the iniquities of the slave trade. It ended like this: "Let all the enemies of the persecuted blacks tremble. I will be as harsh as truth and as uncompromising as justice.

I am in earnest. I will not equivocate, I will not excuse, I will not retreat a single inch, and I will be heard. Posterity will bear testimony that I was right' and posterity does so.

Looking back on the progress made, we first hear the shrill voice of William Lloyd Garrison, and then the roar of the guns that culminated in the American Civil War and the abolition of slavery.

You see the picture I have endeavoured to draw of Garrison, and how everything was against him. You can't be worse off now than he was then and you have more chances. The one thing you may be lacking is the will-power to make the most of them. Garrison had the willpower.

Before a man is strong enough to master a body of men, he must be strong enough to master himself. He may be a good workman and look after several tons of merchandise so well that it is soon discovered he does not require a Superintendent to look after him. To that extent he has succeeded. But if he wants promotion and the handling of men instead of bales or sacks, he has to remember that he has grown in personality.

Character is wanted. Character is one of the parts of willpower. The man in authority will have to plan, organise and command. The flabby man cannot do that with success. The man of strong will can. Many a good worker remains a drudge all his life because when his chance of promotion comes along he is weighed in the balance and found to have insufficient stamina on the face of things—to fit himself for the post.

Mind you I say "on the face of things." Because whilst a man may be capable, he may not look it or act it. Because he has been shy and retiring, and has not asserted his will-power and made himself prominent, he gets overlooked. That's the way of the world. It's

a good way in one respect. It's good when you begin to realise its importance is a rod on your bare back. It then becomes a corrective. Any young man who wants to cultivate will power cannot do better, as a start, than do his utmost to arouse some enthusiasm in himself.

If you have ever been to a big football match, as likes is not you have shouted your self hoarse when your side won. And your enthusiasm was slow to evaporate. When you got home you told the folks there that your side had won. When you got to your place of business you told the people there that your side had won. If you wrote a letter or two about this time, you said your side had won. That is enthusiasm. It's a sort of personal pleasure and credit to you.

You "slop over" about your side winning. It's the right occasion on which to "slop over." You do it unconsciously because you are full of it. Just for this particular occasion you have let yourself go, and although you yourself don't know it, you are a little unnatural and not yourself to those who do know you. That is because you only let yourself go on rare occasions. You haven't thought a bit about yourself. You are full of "my side won."

Now keep on letting yourself go like that as often as you can. Try to get some will power that way. You can do it. It is easy. And presently you will begin to think nothing about yourself and working for yourself and yet, strange to say, at that particular moment you will just begin to think about yourself—only in another way you will begin to think at the beginning of the "I will" stage instead of at the middle of the "I wish" one. The man who thinks he has no self will—or rather the man who doesn't feel he can assert it—will I think get on very nicely indeed if he follows some such line as I have tried to indicate.

Buxton said near the close of his life: "The longer I live the more I am certain that, the great difference between men, between the feeble and the powerful, the great and the insignificant, is energy—invincible determination, a purpose once fixed and then death or victory. That quality will do anything that can be done in this world, and not talents, no circumstances, no opportunities, will make a two legged creature a man without it."

I think it will be worth your while to read over this article once or twice or even more. It is perhaps badly expressed here and there but the intention of it is quite good.

FRUIT AS MEDICINE

By Mr R. Rollo Platel

IN his stimulating and suggestive plea for the expansion and development of fruit culture in this Presidency, a summary of which our indefatigable Publicity Bureau has recently done well in circulating, Sir F. A. Nicholson has referred respectively to the economic, hygienic and aesthetic aspects of the pomological industry, as well as to the dietetic

and medicinal value of wholesome and well raised fruit. As regards the medicinal value of fruit, especially in warding off disease, Sir Frederick makes the following interesting remarks, which, it is certain, the medical profession will generally endorse, subject, of course, to the rational reservation that a surfeit of fruit is as much to be avoided as an

excess of any other description of diet — "Now in tropical areas, the craving and need for fruit is universal, Nature demands it for the sake of health, and it is probably correct to say that the presence of fruit acids in the body tends to ward off many diseases, if only for the fact that pathogenic bacteria perish in an acid medium" Many of our common fruits, indigenous and exotic, are indeed, just as useful and much nicer than doctor's prescriptions

Take, for instance, the pineapple, regarding whose commercial and industrial possibilities I had the privilege of writing in a recent issue of *Commerce and Industries*. The antiscorbutic properties of fresh pineapple juice have long been known and turned to medicinal use. The fruit has been found very valuable in throat affections and has saved the lives of numbers of diphtheritic persons. The juice expressed from a fresh, ripe pineapple is believed to be the finest thing in the world for cutting the fungus like membrane, which coats the throat in diphtheria, and, if used in time, never fails to cure. Of course, this is written, with the view of illustrating the medicinal, in addition to the agreeable dietetic value of the pineapple, and without overlooking the fact that, in this country, diphtheria is very much rarer than it is in European countries, where it is now successfully treated with an antitoxic serum. Indian physicians, however, prescribe pineapple juice, mixed to a consistency with coconut oil, as a good remedy for whooping cough in children, and also recommend the use of the ripe fruit in liver affections as it has the property of expelling bile.

The apple, which is grown on some little scale in parts of this Presidency and the cultivation of which is steadily extending in Northern India, is not only a delicious and nutritive fruit, but possesses varied and undoubted medicinal value. It is one of the best known preventives of throat diseases, it helps

the kidney secretions and prevents calculus growths, and also obviates indigestion. As a purifier of the blood and a cure for dysentery, its value has long been recognised, over and above which, there is the interesting if peculiar fact that this fruit has the property of restoring an intoxicated person to sobriety. A diet of stewed apples, eaten three times a day, has been known to work wonders in cases of confirmed drunkenness, giving the patient eventually an absolute and utter distaste for alcohol in any form. As for grapes, which are produced in several portions of this Presidency, although on a scale and of a quality which are very greatly susceptible of improvement, there are perhaps no species of fruit anywhere which are so easily digestible. To eat a grape a minute for an hour at a time and to repeat this performance three or four times a day, eating very little else meantime except dry bread, may seem a monotonous and eccentric way of spending the time, but this treatment has been found to work wonders for thin, anemic people, whose digestion had become disordered through worry or overwork. This is no quack prescription, but a form of treatment recognised and recommended by many well known physicians. Then, what could be more refreshing and relieving than a fresh, juicy, luscious grape, purple or green, to a throat parched and irritated by fever? In Hindu medicine, its laxative, mildly stimulant and general tonic properties are so well recognised that the grape enters, as an important ingredient, into valuable medicated wines and any number of confections, the fresh fruit being employed wherever possible, in preference to the dried.

Another fairly common South Indian fruit, which serves several valuable medicinal purposes, is the large woodapple, also known as thorny woodapple. In a half ripe condition, it is considered a sovereign remedy for dysentery, for which it has been known to be successfully

used, when other remedies had failed. A sherbet prepared from the ripe-fruit, mixed with tamarind, is recommended as a simple cure for dyspepsia and woodapple preserve made from the pulp of the ripe-fruit is not only a palatable desert dish but eminently wholesome. Similarly, the fruit of the smaller wood-apple is greatly esteemed for its several useful medicinal properties. The ripe fruit is of distinct benefit in throat affections, while the astringent pulp of the unripe-fruit is prescribed as a remedy for both dysentery and diarrhoea. The pulp, which makes an edible jelly, like black currents, is applied externally for the bites of venomous insects, and last but not least, a sherbet prepared from the fruit also possesses alexipharmic properties.

Two species of fruit which are fully abundant in certain portions of Southern India, though perhaps most so on the West Coast are the cashew and the common gooseberry. In addition to several economic uses to which all parts of these trees are applied, their fruits are of no little medicinal value. The succulent apple of the cashew tree possesses peculiar cooling properties, and the juice of this apple, besides being useful in diarrhoea and diabetes, is also esteemed by Indian physicians as a remedy for ascites or abdominal dropsy. As for the humble little gooseberry, almost all Indian hair oil preparations contain this as an essential ingredient owing to its highly cooling properties, and, with the seed removed, the gooseberry is also an essential ingredient in the recipe for *churna prasam*, by far the most important tonic for constitution building. The daily consumption of one or two gooseberries that had been preserved in honey is believed to be a preservative against the inroads of age and senility. The juice of the pomegranate fruit, contained in the red succulent pulp covering the seeds, is slightly acid and exceedingly pleasant to the taste and, medicinally, is well calculated to

allay thirst in fevers, although it is by no means the only product of this tree which is possessed of high and widely recognised medicinal value, even the dried rind of the fruit being put to various therapeutic purposes.

As for the papaw or papaya, which has given to medicine the valuable vegetable pepsin known as papain. Indian physicians consider this fruit, raw or cooked, an excellent remedy for expelling threadworms from the intestines, and in this connection it may also be mentioned that Hernandez pointed out long ago, with reference to the West Indies, that the milky juice of the unripe fruit was highly esteemed there as a powerful vermifuge, while, according to another authority, a single dose sufficed to cure the disease, however abundant the worms might be. In the West Indies, the juice of the pulp is also employed as a cosmetic for the removal of freckles on the skin, produced by the heat of the sun.

The sour lime is another fruit, whose medicinal properties are as valuable as they are numerous. Lime juice is medicinally antalkaline, antiscorbutic, refrigerant, astringent, stomachic, tonic and alterative. For use in fever, nothing can take the place of its acid juice, whose properties serve to bring down the temperature of the patient. Indeed *cydonians* prescribe a lime juice ration during fever preliminary to small-pox, the beverage having the effect, not only of abating the fever, but of rendering the attack of small pox mild and comparatively harmless. Pure lime juice is also a capital remedy for biliousness and bilious headache. It forms an important ingredient in a specific for ringworm, while, for rickets in children, a safe remedy is said to be meat and bone soup, to which the juice of a lime has been added. The soup is then stood over for an hour or so before being given to the patient. Equal quantities of honey and the juice of a roasted lime make a capital remedy for cough in

children. The Italians have what is claimed to be an unfailing cure for asthma, and lime juice forms an essential ingredient in this prescription. An egg is dropped into a cup of fresh, pure lime juice and allowed to remain until the shell has softened. It is then taken out, the shell is carefully removed, and the egg content is well mixed up with the lime juice. Honey is added, and the whole mixture is next heated over a fire. When taken off, it is stirred and left to cool. A teaspoonful of this preparation is administered twice daily to the asthma patient, and a cure is said to be assured. In parts of Northern India, they are said to have a lime juice remedy for diabetes. A fresh lime is cut in four, sprinkled over with fine salt and stood overnight in the due. The juice is afterwards expressed, and you have your specific for diabetes. In short, man could spare almost any fruit better than the lime and its big brother the lemon, which latter, however, is grown in this Presidency to a much less extent than is both possible and desirable.

As has been remarked above, the avowed object of this article is, by drawing attention to the more common and more easily available therapeutic properties of several fruits, whose production in this Presidency admits of being greatly extended, to supplement, in all modesty, Sir F. A. Nicholson's lucid and cogent plea for the extension and improvement of fruit culture throughout Southern India. It would not be out of place to add however, that it is not exclusively for the medicinal value of their fruits that the more extended cultivation of the trees dealt with is to be re-

commended. In addition to the therapeutic properties of their fruits, several other of the products of these various trees serve distinct æsthetic, hygienic and economic uses. A few pomegranate shrubs produce a pleasing effect in a front yard, especially when they are laden with their showy, brown yellowish fruits, and a little trouble expended on them would be well rewarded, seeing that fruit, bask, roots, leaves and flowers all have distinct medicinal or economic virtues. As an ornamental tree, the papaw can give points and beat a good many other foliage trees, besides which, the fruit lends itself admirably to pickling and crystallising and the leaves have the singular property of making flesh tender when kept wrapped in them for some little while. As for the cashew tree, practically all parts of it admit of being applied to some economic use or other, the nut kernels yielding an edible oil superior to European olive oil, the gum exuding from the bark making a good varnish and having, in addition, decided insecticidal virtue. The root of the gooseberry tree is impressed into service by *pythians* while its wood is in demand, above all others, for certain purposes. A well-trained, well-tended vine bush is, indeed, a thing of beauty, and then, what more pleasing picture for the eye to rest upon than a lime tree, laden with its fragrant burden of round, golden tinted fruits, that so effectively set off the green of the foliage? Lastly, let me recall the inspiring observation wherewith Bacon opens one of his most delightful Essays—"God almighty first planted a garden, and, indeed, it is the purest of human pleasures."

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WATER POWER AND INDUSTRIAL DEVELOPMENT.

By Mr R K Sangameswara Iyer M A , L T

The war has brought about, everywhere, an almost unprecedented change in national outlook. In the last few years all nations have been learning economy not only in food and clothing, but also in the utilisation of natural resources. They do not, now, countenance, with indifference, the depletion of natural sources of fuel; 'the reckless prodigality' of the past has given place to careful utilisation of all sources of natural power to the best advantage. It is this universal awakening that was responsible for the appointment, a couple of years ago, of the committee of the conjoint Board of Scientific Societies in England, to report on what is at present being done to ascertain the amount and distribution of water power in the British Empire. The committee has 'endeavoured to collect all the available relevant information' but the information is "lamentably scant and imperfect." Throughout the length and breadth of the British Empire, only two countries—Canada and New Zealand—have till now recognised the fundamental importance of systematic investigation conducted with a view to the utilisation of water power on a large scale.

Nevertheless the investigations of the committee (which by the way is quite silent as regards India) reveal a number of interesting facts. According to a rough estimate the world's present total power demand including all steam, gas and water power, is 120 million horse power distributed as follows —

World's factories including electric lighting and traction	75 million h p
World's Railways	21 " "
World's Shipping	24 " "
Total	120

Of the world's 75 million horse power utilised for industrial purposes only 15 million horse power is developed from hydraulic sources, distributed among various countries as follows —

Countries	Area (sq. mile)	Water power available (h p)	Water power utilised (h p)	Per cent of water power utilised
United States	3,797,000	1,100,000	1,000,000	90.9
Canada	3,960,000	1,500,000	1,400,000	93.3
France	483,000	550,000	500,000	90.9
Norway	124,100	500,000	100,000	20.0
Germany	357,000	1,400,000	1,100,000	78.6
Great Britain	94,000	900,000	0	0.0
Russian Empire	8,500,000	20,000,000	1,000,000	5.0

The following figures compiled by Mr J W Mearns, will indicate the backward state of electrical development in India, the number of watts installed per head of population in Canada is 148, in Austria 62, in South Africa 57, in the British Isles 53 and in India less than 1. Though experts are of opinion that this country abounds in hydraulic possibilities yet no reliable estimate of the total amount of water power available has yet been made.

Indian conditions

The special feature about natural supplies of water power is that their efficient and profitable development depends entirely upon "the acquisition of extensive data, involving prolonged and laborious observation." * The difficulty is even greater in India where the promotion of power development schemes depends on the erratic incidence of the rainfall. The rainfall is seasonal often tremendously heavy followed by long periods of drought. The mountain regions of India are the greatest natural sources of water-power in the country. J W Mearns, who has recently submitted the preliminary report on the water

* Bryson Cunningham

power resources of India, says that "Except in localities where storage on a large scale is possible, such as the Western Ghats and possibly the uplands of Central Provinces the greater part of the monsoon rainfall of India must necessarily pass to the great rivers and canals undeveloped for power purposes," on account of the uncertain nature of the rainfall. Many Indian rivers, again sink to insignificant streamlets in the dry season, therefore, storage during the monsoon season appears to be the only possible means of obtaining continuous supplies of water.

Any mis-givings, as to the soundness of such schemes, from the financial or industrial point of view, have been dispelled long ago by the unique success that the Tata Hydro Electric Power Company has met with. Numerous mills and factories of Bombay, hitherto using steam power, are now supplied with more than 100,000 horse power by the Hydro-Electric Company. It is practically realised that water power thus provided is very much cheaper than power from coal or oil "gives a better *drift*" and frees Bombay from the clouds of deleterious smoke which the poor Indian coal gives. Such water power schemes are valuable from another point of view. As Mr. Joyner has observed, "the water after use is available for irrigation so valuable in a country without a drop of rain for a large part of the year. This would ensure the growth of the raw materials required for finished products on which the country is now so dependent upon other countries. It would also supply the factory workers or others with food and drink and help to prevent famines, besides doing much to regulate rainfall. Such power will provide electric traction for raw materials to, and finished products from, the factories, as well as light for them and neighbouring towns, produce fertilisers, and give the great heat required for the smelting of ores. Many industries would then be self-contained, and India would compete with Europe, America, or Japan for its finished products, and would become less dependent upon its agriculture, which the varying seasons render somewhat capricious." If the development of our natural resources is, thus, inseparably

connected with the development of the water power of our country, the development of such enormous possibilities should not be left to chance but should be carried out by competent authorities under the guidance of the State.

Mr. Dickinson, another expert engineer, has been investigating the possibility of utilising for power purposes the irrigation lake at Perivur. So far the investigations showed that a thoroughly workable and commercial scheme for the manufacture of nitrates on a large scale could be established. He was also aware that power could be obtained from the Bari Doab canal and the Dudh Sagar falls, and he had every reason for believing that a considerable amount of power could be secured in many parts of India. The advantage of water power development in India would be apparent to those who are interested in, and who appreciate the industrial awakening of this country for it would materially hasten that awakening. With our enormous supply of minerals for metallurgical development, materials like cotton, flax and jute and cheap labour, a great commercial and industrial development may be expected. In the words of Mr. Dickinson, "although much has been done, her industrial possibilities to use a vulgarism, have scarcely been scratched."

Even in such an advanced country like England, the Water-Power Committee was of opinion that "since it is unlikely that private capital will be available for many years for hydraulic development on any large scale, powers should be obtained for the state to assist or undertake such development if thought advisable." How much more is this true of India. The Government must smoothen the way by affording every facility for the development of hydraulic schemes by way of expert advice, systematic survey and by state initiative. The following remark made with reference to England is equally true in the case of India, "Continued neglect of the matter can only be attended by consequences not merely inimical to immediate national interests, but also economically prejudicial to the welfare of succeeding generations."

PREVENTION OF FAMINE

By Historicus

OF late, there has sprung up a band of Indian students of Economics interested in the study of the very important questions affecting the material prosperity of their motherland. It would be well if adequate attention is devoted to the solution of such great problems of vital importance affecting the real well-being of the nation. Students of Indian Economics, particularly such of those who have obtained a Diploma in Economics in the University Examination will do well to make a practical study of the causes of the famines in India and to suggest effective means of prevention. Millions of starving sufferers all over the vast continent of India have been led by the Government from time to time and relief works have been started. But, these were only temporary measures for the time being while the root cause of famines was not touched. Eminent Economists like the late Messrs R. C. Dutt, Ranade, and Gokhale who worked for the country, lived for the country and died in the service of their country and its people have already made valuable suggestions to better the condition of the agriculturist and the cottage worker by means of extensive irrigation, grain storage, export duties on grain, agricultural banks, village industries, technical education, arbitration courts and remissions of land revenue during the periods of famine. The blame for the neglect of the people cannot be entirely thrown on the Government. The citizens of the country equally bear the responsibility as onerous as that of the State for the material prosperity of the people. It is the duty of the citizens of every country to set up organisations to focus public opinion and to enlighten the Government as to the best methods of ameliorating the condition of the backward people. Such organisations, if conducted on sound business lines, can do in a

decade what the State alone can achieve in a century. Indian Economists and such of those who have the leisure and the means at their command with the sense of the realisation of their duties and responsibilities as citizens ought to take a lively interest in the matter. In each province typical villages should be selected. Their economic condition should be completely enquired into and the financial position, past and present, of each cultivator, artisan and cottage worker, should be ascertained and recorded. Practical suggestions should be made as to the revival of the decaying cottage industries and the introduction of the new industries suitable to the locality according to the condition of the people, the extent of the raw material available, and the adaptability to the present market. When the enquiries which should be both minute and comprehensive are complete experiments should be tried on co-operative lines or by joint stock enterprises according to the circumstances in typical villages which, when successful, should be extended to groups of villages under similar economic conditions. Our country, once the richest, the most civilised, fertile and industrious in the world has been subjected to a series of economic crises. The masses of the people are resourceless, the manufacturers are crippled and the agriculturists are indebted. The need for skilled workers and technical experts is evident everywhere. The country has suffered untold loss owing to the exclusion of the people from all share in the management of their own concerns. The future economic progress depends on the people and on the people alone. Their fate is in their own hands and their destiny rests on their labours, only if they work with strong determination and firm conviction and without swerving from the path of their duty to their country.

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A TALK ON WASTAGES.

By Mr Pratap Chatarji, B Sc

It is the principle of the modern world to utilise the maximum percentage of a thing and waste the minimum amount possible. The day, we read in news papers that Germany was preparing a food from saw-dust we all marvelled. Things, that we throw away as refuse, may in able hands transform into something, which is magnificent. In these days of keen economic strain all over the world, it is only meet that all of us should try our level best to prevent wastages. The amount of the capacity of utilising a substance proves the ability of a nation to compete in these hard days,—and not only so it brings in wealth. It is not miserliness but it is worthiness for living. Hundreds of Leagues of Nations may be formed, but it is certain that 'Might is always the Right,'—whether this might be the might of intelligence, or of strength or of wealth,—what suits the occasion. India must have to struggle and show her might in order to make a stand. The pressure of the economic war is most keen on this poor country of ours, since her 315 millions have nothing to face the war with. But nevertheless, we are to face it. How? Are we to be crushed to death? The answer can only come from the Nation itself. It is a struggle for existence. What are we to do? Had we been rich, the solution of the problem would be easier,—but India is the poorest country of all. Then? There can be only one way at present, that is to get ourselves rich by preventing wastages. We must save money, we must increase our capital and income. We must be utilitarians in the strictest sense of the word.

I shall give here an instance. Every body has heard of the Rubber Solution. How is it prepared? This is done by dissolving proper quantity of rubber in the oil of Turpentine by

gentle heating. Now, this rubber may be easily procured from torn cycle or Motor Tyres, which are usually thrown away as quite useless. I think not less than 10 lacs of rupees are being drained out of India in this Rubber solution alone.

It is clear that only a Scientist can tell that how a thing that is being thrown away may be profitably utilised in some other way. There is a talk about instituting an Indian Chemical Service. There cannot be any doubt of it that such institutions are what India is in absolute need of. But, as Sir P. C. Roy has said, the 'officialisation' of Science cannot be tolerated in any case. I need not repeat the very cogent reasons that this eminent scientist gave. But, I venture here to suggest a point. The Government should institute well equipped laboratories one or more under each or all of the Indian Universities. In these laboratories, the Senates will appoint men of ability as salaried research students. If any person, by dint of his merit, achieve something good, that person will be given a suitable reward by the Government for each one of the results. These researches should be all of a type that may improve the wealth of India and, so naturally, should be applicable in manufacturing enterprises. Every such research should be regarded as automatically patented by the discoverer.

I believe such a method will be beneficial. Look at the Calcutta University College of Science. It was founded only the other day, and it has done wonders. Indians are not fools as they are taken to be, given opportunity, they are sure to challenge anybody in this world, with success.

REFLECTIONS ON THE SOAP INDUSTRY IN INDIA.

By Mr B P Khambatta, M A

THE last issue of the Year-book of the Indian Munitions Board mentions with reference to the development of industries that all the ingredients for making soap are indigenous and comparatively cheaper here than in other countries. To what an insignificant extent these natural resources are being utilized will appear from a glance at the import figures for any year issued by the department of statistics. To take a month at random, in July of last year, there were imported into this country, 28,407 cwts of soap from the United Kingdom and 2,403 cwts from other countries, making a total of 30,810 cwts of the total value of Rs 1,319,307. The figures from the 1st of April to the 31st of July 1919 show the total quantity of imports at 94,833 cwts of the value of Rs 3,769,527.

There are now in India over a hundred soap factories, large and small, the majority belonging to the latter class. Though the local manufacture has increased appreciably, the Indian market for this commodity is still worth about three quarters of a million sterling. The bulk of this foreign trade is with the United Kingdom, but the United States also export toilet soap to this country in greater quantities every year. The value of such exports in 1918 was £20,000.

Of the factories in this country, the Madras Presidency has probably the largest number. The Western coast of this province is famous for the production of cocoanut oil, and fish oil obtained from sardines which teem in the neighbouring seas. This oil is pronounced to be unique by reason of its purity, colour, and slight odour. It will therefore play a great part in stimulating the soap industry in this province and in the neighbouring state of

Mysore, which already possesses two or three good machine worked factories. Calicut has the proud privilege of possessing Government soap works the machinery of which I am told, was supplied by E. Forshaw & Sons Ltd., of Warrington, England, and is of a type easily manageable by Indian workmen. About £1,000 would cover everything necessary for a 5-ton plant, while £1,200 to £1,500 should be enough for the establishment of a 10-ton plant for the manufacture of bar soap.

Calicut occupies an ideal place site for a great soap making centre. Being a sea-port, it can obtain cheap sea freight to Bombay which may be used as a distributing centre for the rest of India. There are now firms in this country which manufacture caustic soda, glycerine, and other chemicals used in soap-making. If such concerns are opened in the Madras Presidency wherever suitable raw material is found, this province may in time have a flourishing soap industry, with markets not only in India, but in East Africa, Persia, Mesopotamia, and other neighbouring countries.

The city of Calcutta has a few good machine-worked factories. In addition two new flotations have been planned, one being the Calcutta Soap Works, with a capital of five lacs and a strong board of influential Indian directors. The other is the Premier Soap Factory, an English undertaking with a capital of twenty five lacs. The agents for the latter are also agents for the Premier Oil Company, and it is intended to work both these concerns in the closest co-operation.

Other places which boast soap factories are Cawnpore, Delhi, Agra, Ahmedabad, and Lucknow. I have seen factories in such

small places as Aligarh and Hathras commensurate of course, with the size and dignity of the place. They supply some part of the local demand, just enough to keep them going for a period, long or short, as the fates may decide.

Coming to Bombay, there are over a dozen so called soap factories in this city. Yet few are aware of their existence as they rarely seek the limelight of newspaper advertisement. Many of them affect out-of-the-way places with the intention of securing a double economy in rent and license fees. In all the factories I have seen here, the hand method is employed as being the cheapest and within the scope of the capital that can be afforded. No great care is taken to turn out an attractive article, the only attraction aimed at in most cases being cheapness. Some of the more ambitious makers go in for toilet soaps, which are manufactured in small hand worked machines which probably came to this coun-

try a quarter of a century ago. I know a maker, more enterprising than others, who turns out a kind of shaving soap that has ample length and breadth but no thickness. I once used it on my face, but have never had a desire since to repeat the experiment. The reason why these factories do not expand is because an owner is content with what he gets, and is quite happy to let well alone. The fact that these concerns petty as they are, do pay, is a proof that the industry, if earnestly taken up by big capitalists, would fetch a very good return upon the outlay. The use of machinery is essential both for a large output and for economy of manufacture. All the conditions requisite for a successful soap industry are present in India, and there is no reason why it should not become a great producer of soap which can be done here in the way of new industries if carried out on proper lines with sufficient capital and good management.

NOTE ON LAC INDUSTRY.

BY MR. S. Y. KANUNGO, M. A. (INDORE STATE)

The attention of the Commerce and Industry Department has been attracted by an article on lac appearing in the supplement to the "Indian Trade Journal" of February 13th 1920. As the subject is of considerable practical importance, it is proposed to publish both in Hindi as well as in English a brief, intelligible note on the industrial possibilities of lac with a view to arouse local enterprise in the matter.

India holds a natural monopoly of the lac industry, the average crop of stick lac being probably well over 7, 25,000 cwt. in spite of the regrettable fact that no serious attempts have so far been made to increase its produc-

tion. The Hyderabad State, however, is taking steps to increase the production of lac and the increase is practically only limited by the amount of labour available. It must be said that lac not only grows wild in the forests but can also be cultivated. In the Hyderabad State the difficulty and expense of obtaining healthy brood-lac has been, in the past a serious obstacle to the extending of lac cultivation. But the difficulty will be removed if the system of direct leasing of collecting rights to the actual cultivator, so far as possible and the exclusion of a certain percentage of brood lac from the concession, this quantity being reserved by the lessor for the propagation of the next crop, be resorted to.

Formerly lac was almost wholly used for the manufacture of lac dye. But this industry is now dead owing to the competition of synthetic dyes. Lac dye is now only used for artistic rugs and saris in certain parts of India. From lac is prepared also the wax which is used for Boot polishes. But at the present time lac is almost wholly used for the manufacture of shellac. The stick lac (the crude material taken out of the bark of the tree) is ground and sifted after which it is washed free of dye. The resultant *seed-lac* is then manufactured into shellac by fusing it before a fire. A small quantity of orpiment (a kind of colour) is frequently added to produce the light yellow colour and a small admixture of rosin is made to lower the melting point. But neither of these two substances is necessary for the manufacture of shellac. On the other hand, they give room for adulteration which is reported to be notorious in certain cases. In adding and mixing these things the manufacturers only submit to the demands of the trade.

The uses of shellac are simply manifold in the present age. Besides its use in the manufacture of gramophone records, sealing wax, buttons, lithographic inks, imitation ivory, oil-cloth etc., shellac is now employed in the making of electric insulators and explosives, which has brought it into great prominence during the late war. There are several other important uses of it such as, making of bangles, bracelets etc., which have not been mentioned here, for the sake of brevity. It will thus be seen that shellac has a great demand both in, as well as, outside India. Even ten years ago the total value of the shellac export trade was 2½ crores. Now owing to the inflation of prices it has gone up to 5½ crores. Though the trade in shellac is highly speculative, it is reported to be conducted on satisfactory lines.

There are a number of small factories in the United Provinces, Bengal and Bihar where hand made shellac is manufactured from lac, the most important localities being Mirzapur, Bilaspur, Imanganj, Poku and Jhalda. There are two concerns in Bengal where, machine made shellac is manufactured by patent processes. But it is said that machine-made shellac cannot compete with hand-made shellac and the latter is, except for deliberate adulteration of which there is unfortunately a great deal when the demand is large) is all that is required by the consumers.

Central India is reported to be one of the main lac producing areas in India and yet unfortunately no attempts have so far been made to start and foster the shellac industry. Looking to the great demand which shellac has, because of its so many important uses, there can be no doubt that this industry has a great future before it. Attempts should therefore be made to the raw material of lac which is reported to be available in plenty in Central India being utilized in the manufacture of shellac for which there is such a large demand of the trade.

It is expected that local enterprises will not fight shy to take up this very promising industry before other outside people begin to take advantage of it. It is needless to say that the State Revenue and Forest Departments will give them whatever assistance they can in the collection and cultivation of lac, while this Department will give every sort of assistance in the manufacture and trade of shellac.

THE INDIAN MERCHANTS' CHAMBER AND BUREAU, BOMBAY.

Excerpts from the proceedings of the Committee for the month of June 1920 —

1 Enfranchisement of Native State Subjects —

A representation was made to the Reforms Commissioner, Poona stating that the disability imposed by Rule 7 (1) of the Government of India rule would work very unfairly and inequitably in the case of general constituencies and in the case of special constituencies like the Chamber especially in view of the fact that such Native State subjects paid all the taxes of British India and were amenable to all the laws thereof. In conclusion it was stated that if the Government was unable to accede to the request of the Committee they would like to send a deputation to wait upon His Excellency the Governor in Council and to explain the whole situation to him and the Council. In reply it was stated that the decision of the Government was arrived at after giving the matter careful consideration and after it had received the support of the majority of the Non Official Advisory Committee.

At last however, in view of the representation made by various public bodies His Excellency the Governor in Council has decided that rulers and subjects of Indian States who are otherwise qualified under the Electoral Rolls should be eligible as voters for the Bombay Legislative Council under Rule 7 (1) and that subjects of Indian States otherwise qualified should be eligible to become members of the Council under Rule 5 (1) and 18 (1).

2 Chamber's representation on the Council of State —

A telegram was sent to the Government of India, Reforms Department thanking them for the privileges given to the Committee of returning a representative to the Bombay Legislative Council and the Indian Legislative Assembly, regretting at the same time that unlike the English and foreign commercial interests, they (Committee) were not given a similar right of election to the Council of State. In reply the Government of India explained that Indian commerce was intended to have special representation on the Legislative Assembly and European Commerce on the Council of State as would be seen from the draft rules published for general information.

3 Appointment of Sir Fazalbhoy to the Imperial Economic Conference —

In this connection it was resolved to write to the Government of India expressing regret at the policy of 'nominating' representatives of India at International Conferences having been again followed with regard to the Selection of a representative of this country at the International Economic Conference. It was hoped that in future the policy of nomination would be abandoned and the policy of election adopted instead.

4 Representation of the Chamber on the Bombay Port Trust —

Mr. Manu Subedar, representative of the Chamber on the Bombay Port Trust obtained from the trustees leave of absence from the meetings of the Board for 4 months. The Honble Mr. Purshottandas Thakoredis was appointed a Trustee for the Port Trust during the absence of Mr. Manu Subedar.

5 Indian situation in East Africa and Fiji —

A letter was received from the Secretary the Imperial Indian Citizenship Association inviting the Chamber to join in calling a public meeting of the citizens of Bombay to give expression to the Indian public opinion on the Indian situation in East Africa and Fiji. The Chamber was further requested to send representatives to co-operate with the Sub Committee that was appointed for the purpose. It was resolved to appoint Messrs. Sorabji Edulji Warden and Mavji Govindji Sheth as Chamber's representatives, on the Sub Committee.

6 Views of the Chamber on the recommendations of the Indian Cotton Committee —

A letter was received from the Government of Bombay forwarding, for the information of the Chamber, the views of the Government of India on certain recommendations of the Indian Cotton Committee. It was resolved to refer the matter to the Cotton Sub Committee for their opinion. A draft embodying the views of the Cotton Sub Committee was received which was resolved to be sent to the Government of Bombay after some modifications. While agreeing in the main with the several recommendations the Committee differed on the following 3 points:

- (1) That gins and presses should not be brought within the provisions of the Indian Factories Act.

(II) That the constitution of the Central Committee was not quite satisfactory

(III) That prohibition should be placed upon the transport of 'Kuris' from one district to the other to prevent adulteration provided such a transport is not carried on by *bona fide* consumers

7 Deputation to the Viceroy to protest against the Currency policy of the Government of India —

At the invitation of the President of the Public Meeting held in Madras to protest against the present Exchange and Currency policy of the Government of India (*Vide* Extracts for the month of May Item No. 7) it was resolved to appoint the following gentlemen as representatives of the Chamber to join the proposed deputation

1. Mr. J. Chariat B. Manjunath Prasad (Chairman)
2. Mr. S. Subramanian Varadachari (Chairman)
3. Mr. B. I. Madan
4. Mr. M. V. Govindan

8 Indian Colonisation in German East Africa —

In this connection (*Vide* Extracts for the month of April 1920 Item No. 5) a letter was received from the Government of Bombay stating that the Government had the following questions under consideration in connection with the proposal of Indian Colonisation in German East Africa —

1. Whether from the point of view of India it was desirable and practicable to attempt an organised form of settlement

2. How far a settled type of agricultural or service men or others would be attracted by the prospects of free settlement in the territory

3. Whether the Government should encourage such Colonisation and how far they should give financial assistance

It was resolved to refer the question to the East African Sub Committee

9 Amendment of the Indian Carriers Act III of 1865 —

A letter on this subject was received from the Government of Bombay. The present law on the subject is embodied in sections 3, 4 and 8 of the Act is that although a common carrier is not liable for the loss or damage of property of a certain description above one hundred rupees in value unless the value or description thereof are expressly declared by the person delivering them to be carried and although the carrier is entitled to charge a higher rate for such property, he is liable for

the loss of or damage to such property if such loss or damage arises from the negligence or criminal act of the carrier or of any of his agents or servants. The amendment proposed is that Sections 8 and 9 of the Act should be amended so as to provide in the case of scheduled article not declared under section 3 that the carrier will retaining his present liability in the event of a criminal act should be freed from liability for loss or damage arising from the negligence of the carrier or his agents or servants. The amendment being likely to relieve the Shipowners Companies from a part of their present liabilities without entailing any unnecessary hardship on the public it was resolved to approve of the proposed amendment

10 India Railway Conference Association —

A letter was received from the Secretary of this Association informing that the next meeting of the Traffic Committee of the Association was to be held in Bangalore commencing from Monday the 28th June 1920 and asking for suggestions if any from the Committee. The Committee in reply said that there was a rumour that the question of the increase of rates for goods and passenger traffic was to be discussed at the Conference and that if that was the case they would like to meet at the question could not be considered without consulting the commercial public. In reply to this they were informed that there is no question of a general increase in rate and before the Traffic Committee nor was it within the powers of the Committee to make any alterations in rates

11 The Finance and Currency Policy of the Government of India —

In reply to the representations made by the Committee for the time being received from the Finance Department of the Government of India with the following remarks —

(1) That in reply to the representations they had to refer to the Committee to the Notification of the Finance Department No. 39 dated 1st February 1920 and that they had nothing to add to that announcement

(2) That they have noted the Committee's protest against the sales of Reverse Councils

(3) That the Government of India have decided to publish the names of successful applicants and the amounts allotted to them

(4) That the publication of the names of unsuccessful applicants might be regarded by them as being open to objection

(5) That they would most emphatically deny the implication suggested in the Committee's letter that preference was given to European over Indian applicants

It was resolved to write to the Government that in view of the altered circumstances the question of reconsideration of the recommendations of the Currency Committee might be considered and that they (Committee) saw no objection to the publication of the names of unsuccessful applicants of Reverse Councils

TRADE AND FINANCE.

Reduced Taxation Imperative

ON all sides one hears the plaint of a marked falling off in trade, amounting, in some cases to a state of affairs but little removed from complete stagnation, (says *Financier*). Many profess complete mystification as to the cause while others are convinced that a deep conspiracy between the Government and the banks to bring about general deflation is at the bottom of the trouble.

It is true that, whatever the underlying reason prices have come down in many directions, and, with the decline, the spending public have shown a marked disposition to button up their pockets. Just as the higher prices went the greater appeared the demand, so the fall has been accompanied by a lessened desire to spend.

The explanation of this somewhat sudden falling off in trade generally is to be found not in one single cause but in many. The talk about deliberately engineered deflation may be dismissed at once because this explanation implies deflation in a monetary sense which has certainly not yet occurred. As proof of this one has only to point to the very trifling reduction in the floating debt, the expansion rather than contraction in the currency note circulation and the strong presumption that the deposits of the joint stock banks have if any thing increased.

The Check to Inflation

It was inevitable that the time must come when the progressive inflation set in motion by the war must sustain a check. That check has been experienced but a mere check to inflation must not be confused with actual deflation. That development, however devoutly to be wished is likely to prove extremely elusive and merely a dream of the more sanguine whose optimism would scarcely survive the logic of facts.

But although it is something to have put a spoke in the internal wheel of inflation the consequent jolt to the passengers has been very far from pleasant. Nevertheless the effect will be salutary and the damage any thing but lasting.

Our view is therefore that trade and industry will gradually recover their normal course but will proceed on a much sounder and safer foundation. While credit facilities have been rightly curtailed in many directions it is more than doubtful whether the aggregate accommodation afforded by the banks has undergone any reduction. Loans and credits have been individually and collectively submitted to a very close scrutiny. Facilities for financing speculative commitments have been

curtailed on all sides, while the assistance given to legitimate trade and industry has been limited only by the capacity of the banks to afford it. During the last two years industrial development reconstruction and expansion have imposed an enormous drain upon the financial resources of the country. The supply of credit is not unlimited and the time had come when the banks however desirous of promoting legitimate industry, had to impose a system of financial rationing.

What Hampers Industry?

At the moment, then, the trade of the country may be said to have drifted into a quiet backwater. Feverish activity has given place to a dead calm. Both are extremes, and, as such, only to be regarded as temporary phases. For the time being industrial activity is hampered by the chaotic state of the world's exchanges. At the same time the home demand for manufactured goods, as well as commodities which had been only very partially supplied for some years has now been fairly well satisfied.

The greatest menace to the expansion of trade is of course the burdensome nature of taxation at the present time, and unless steps be taken at an early date to reduce the pressure in this respect a prolongation of the present stagnation is inevitable while the danger of an actual crisis will be very real. As the Federation of British Industries indicate in their letter to the Prime Minister taxation has already reached a point which prevents the continuance and expansion of productive enterprise. In other words we must stagnate, and this, in turn may well give rise to unemployment, reduction of revenue and ultimately to a financial breakdown. There is, therefore something to be said for the view that the present lack of enterprise and general slackening of trade are but the first symptoms of over-taxation.

The Cost of Manufacture

It is apparently not fully realised that, owing to enhanced cost of raw materials the rise in wages and in practically every item of expenditure the cost of manufacture is about four times that of the prewar period, and that in consequence the amount of capital involved has undergone corresponding increase. Industry is also faced with the very disconcerting fact that while the hours of labour have been reduced thereby curtailing production the amount paid in wages is computed to have increased by 140 per cent.

To sum up it is evident that with taxation at the present level the industry of the country must be deprived

of the necessary capital to maintain it at the existing standard quite apart from any possibility of expansion. It is a question of killing the goose for the sake of the golden eggs. No sane Government can hesitate as to the right course to pursue with such an alternative before it.

INTERNATIONAL TRADE (EXCHANGE)

Mr Gwynne asked the Secretary of State for India whether his attention has been called to the statement of the Exchange Telegraph Company on the 29th June that India's balance of trade for April is in her favour to the extent of 654 lakhs. How much of this excess of exports over imports refers to this country, whether it is paid in gold, and if so what is the equivalent of 654 lakhs in pounds sterling at the present rate of exchange?

Mr Montagu: India's net exports of merchandise on private account amounted in April to 687 lakhs. This information was reported by telegram by the Government of India but as the detailed figures have not yet reached me I am not in a position to state what share in this trade balance relates to trade between India and this country. Exports and imports of commodities form, however, only one element in a country's international account and during April there was a steady demand for remittance of funds from India to London. In April the net import of gold into India on private account amounted only to about 14,400 fine ounces, being the equivalent of about 61,200 sovereigns.

THE BOOM'S AFTERMATH.

A POINTED MORAL FOR TRADERS OF TO-DAY BY HERBERT KENDRICK

THE phenomena of great world trade movements though of absorbing interest and deepest concern to all of us are very seldom studied.

As buyers or as sellers we generally take the near view of markets. We growl over the price we pay, or gloat over the price we make the other man pay and don't bother our heads overmuch about trade cycles and the wheel of commerce coming full circle a year hence.

But a broad survey of the great trade movements over a number of years yields certain definite lessons. Never a boom without a crisis, seldom a crisis without a panic, never a panic without the resultant period of depression which in turn eventually yields to a new buying wave—a fresh prosperity period—another boom.

Is not the basic reason of most trade crises the simple fact that few people think and act for themselves? A buying movement starts—and all we like else rush to follow it. Harmless citizens hearing the sounds come trooping after, fearful of "getting left." And there you have a boom in being.

To recognise and understand the main causes of booms and panics is to take the first step towards controlling them—towards lengthening the period of healthy prosperity, assuaging the dolours of depression, and drawing the pangs out of panics.

Let me briefly set out the stages and point the moral as it applies to the business phase we are passing through.

Touching Bedrock

During a period of depression people consume less. Frugality becomes fashionable. The cracked pot goes

to the well with its leak stopped may be with a bit of soap. Wardrobes are thriftily used up, household equipment is allowed to go to the last gasp. Throughout the entire community repenting is out of favour, stores and retailers watch their shelves clear, manufacturers permit their stocks of raw materials to run low. Consumer everywhere live from hand to mouth.

Keen business men their ears to the ground presently form the opinion that *'the bottom has been reached'*. They begin cautiously to buy again and to plan. Manufacturers here and there working short time commence to lessen the short time.

Labour feels a quickening in the demand for service, and begins to draw more wages per week. The faint beginning breeze of the trade wind reaches the small shopkeeper, workpeople pay their bills and increase their orders.

The shopkeeper begins to order bigger supplies. The factory looks ahead and buys more materials. The quickening motion industry reacts on many others.

A hopeful business sentiment gradually takes the place of the *'this old country's going to the dogs, let's emigrate'* feeling.

Rising Price Infections

The optimist begins to tell the tale, his neighbours listen and are affected. Men contemplating expansions persuade themselves the time has come. Markets begin to notice "an increase of enquiry." Mysteriously a feeling of commercial courage has been born overnight.

--what Carlyle called 'the long ledger of despair' is closed

The effects of all these tentative beginnings of activity are cumulative. Rising prices like measles are infectious. They not only affect other prices but they exert a powerful influence on potential buyers. People like to be in the swim.

As the buying wave progresses and broadens into a boom, costs increase, cheap loans run out, new ones can only be negotiated at higher rates, and profit margins all along the line increase. Demand overwhelms supply, wages and overtime increase adding to the purchasing power of the community, and economy in the workshop and the home gets shoved into a corner. Costs inevitably further increase as small wastes multiply.

When prices have been rushed to a giddy peak the checks of dearer money and higher working costs begin to operate. Demand, first in one line, then another drags. Buyers having satisfied their most clamant wants now look critically at a new price and say "This is a bit thick." Merchants become wary and place no new orders.

Our Immunity From Panics

Banks discourage loans over extensions at abnormal costs, looking ahead at a prospective decline in stock values, they call in credits or demand additional security. Weak holders are forced to liquidate. Strong holders also rush to realise some of their holdings whilst prices are still high. Prices having gone up like a rocket now come down like its stick. Trade reaches a crisis.

If the boom has not gone too far and has been judiciously handled, the crisis will not degenerate into panic. In England we are familiar with these recurrent trade crises but our commercial common sense, and the sound organisation of our banking system generally enable us to prevent violent panics. This month's number of an American bankers journal says —

England has gone through a number of crises without real panics. It is her way. The year 1907 which brought a severe crisis and a severe panic to the U.S. was marked in England by a rather mild crisis without any panic phenomena.

In 1907 the American cables week after week brought news of disastrous failures and of the suicide of one prominent financier after another or of their poor dupes. I have in my hand a terrible list compiled at the time, comprising leading actors, university professors, as well as bankers and financiers.

Japan's commercial inexperience has brought her to financial and industrial panic in the throes of which

she is still labouring. This month the cables have announced the suicide of a prominent Japanese banker, and a trader brought about by the financial crisis.

British Banks' Brake on

But the way of panics is not England's way—despite those who, for political purposes, are frightening our customers and trying to make us lose our heads by shiekling the wicked legend that our trade is killed.

The financiers and business men who are blaming the banks for putting the damper on over extensions will be thanking them a year or two hence, when machinery and other costs have dropped to more reasonable levels.

The lessons I draw from a study of the trade movements of the past are these —

We have done uncommonly well in the last five years, practically every industry in the kingdom is on a sounder footing and has bigger reserves to fall back upon to day than ever before. The grave crisis in Japan, and the lesser ones in China and America unmistakably signal to us to restrain anything approaching over trading. The uncertain outlook in Europe spells the same message.

We have indeed arrived at a time big with promise for our commercial future but to day all the augurs cry out to business men for conservation and economy—not for reckless further expansion for getting the best out of what we've got by easing and oiling wheels that are running crazily and hampering production.

Work enough in this for all we have to spare of wisdom and craftsmanship. Business men from self interest can be trusted to take up their cue—it is the spendthrift Government departments that will need a deal of watching and curbing. (*Sunday Chronicle*)

British Trade Returns

The Board of Trade Returns for the month of June make a satisfactory showing. Compared with the corresponding month last year, the value of the total imports rose by £47,616,840 but this was offset by an expansion in total exports of £59,949,851. For the first six months of 1920 the imports rose by £316,547,251, over the corresponding period of 1919, while the expansion in the total exports for the same period was £383,167,505. Of course much of this huge gain is due to inflated values. The net increase in the values of food, drink, and tobacco imported during the month was slightly over £8,000,000. Of this, £7,888,275 came under the heading of grain and flour, while other food and drink, non-dutiable, increased by £2,562,191. Against the increases there was a drop of close on £2,000,000 in the value of imported meat, while there were slight shrinkages

in dutiable food and drink and also tobacco. Among raw materials raw cotton increased by £4,576,544; wood and timber by £2,882,068; and paper-making materials by £2,664,530. A decrease of £1,752,451 was shown in the value of imported wool as compared with June, 1919. On the export side the principal rise was shown under the heading of cotton yarns and manufactures, which increased by £17,344,430. Iron and steel accounted for £6,183,703 in the expansion of exports and woollen and worsted yarns for £1,530,266. The rise in

the value of exported coal was only £1,000,584. This indicates a reduction in actual exports, for prices now are considerably higher than in June 1919. The total tonnage of vessels entering British ports with cargoes during June was 5,108,689 tons and the clearances were 5,082,490 tons. For the six months ended June last the total tonnage was 16,857,884 tons, of which 12,296,905 tons was represented by British vessels. The clearances for the same period were 18,706,626 tons, of which 11,092,267 tons were British. (*Financial News*)

WORK OF THE WORLD.

A WORLD CHAMBER OF COMMERCE

THE HOPE OF ECONOMIC PARTNERSHIP

(BY SIR IGO CHIOZZA MONTE)

The successful first meeting of the International Chamber of Commerce will be welcomed by all those who believe that the lasting peace of the world can only be guaranteed by the economic partnership of the nations. It is not merely that the general economic dislocation resulting from the war has made it necessary to take common counsel how to get the world to work again. Even before the war broke out it had become apparent that if each country was to make the best of itself it was necessary to join hands with other nations to achieve the best results. We saw the formation of international trade associations, as in cotton, and even of a world league of iron producers. Not infrequently the trading corporations of different countries entered into mutual agreements for trading purposes. Some of these movements were tentative, others, like the formation of the International Institute of Agriculture with headquarters at Rome, were of a permanent character. It is very earnestly to be hoped that as a result of the war we may advance more rapidly in the framing of international economic partnerships.

The League of Nations and the World Chamber

The new World Chamber of Commerce may prove to be a valuable adjunct to the League of Nations. The Covenant of the League constitutes it not only an institution for the prevention of war but for the promotion of "fair and humane conditions of labour, and for the surveillance of international bureaux and international conventions. The World Chamber aims at a permanent organisation with an international headquarters, which will collect economic and social data and seek to co-

ordinate world economic factors and to suggest appropriate legislation. It is apparent that such an organisation, conveniently placed at Geneva, could greatly further the objects of the League of Nations Covenant. Although outside the League it is at one with its purposes and might well be brought into liaison with it. Certain it is that we are not yet applying to the world the scientific resources which are at our disposal and that international co-operation is needed for purposes both of development and of conservation. The ultimate aim is to put the world and its resources at the disposal of every man. The real "man of the world" has not yet arrived, but he will certainly do so and he will be a fortunate being.

SAFETY IN INDUSTRY

Mr Royal Meeker of the American Department of Labour attributes no small share in the reduction of industrial accidents to the careful collection and survey of statistics. "The men," he says, "who are engaged in analysing accident statistics by tabulating them by causes and severity of injuries are like the general staff of the Army. For example blast-furnaces in America formerly contributed very largely to the fatal accidents in the manufacture of iron and steel. Record of the heavy toll of deaths due to blast-furnace accidents led to reforms in construction which prevented "blow-outs" and their accompanying fatalities. Again, the abolition of the hand-charging of blast-furnaces has eliminated fatal gassing among those who had to work at the top of the old style furnace. Indeed, it is generally true that to obtain good information, whether in industry or in civil government, is the first step to improvement. The

fact should be pondered by those who are inclined to urge false economy in the making of national records

Very Small Coal

Time was when small coal fetched a small price as inferior fuel. Now the wheel has come full circle with the deliberate manufacture of coal dust for scientific employment. The 'Ironmonger' gives an exceedingly interesting account of the growing use of pulverised coal as a furnace fuel, the method giving complete or almost complete, combustion. It originated in America where the consumption of pulverised coal is rapidly growing. Any coal may be burned in the pulverised form, but the method has the advantage of making coal of the lowest grade an economic fuel. The latest development of the pulverised coal system is termed "Colloidal Fuel." This consists of minute coal dust floating or incorporated in fuel oil. Extremely fine division of the coal particles is important, the actual dimension being about 0.001 inch in diameter. For this colloidal method bituminous coal, anthracite, lignite, peat, wood flourmill waste, sawdust, etc., may be used. Sweden for example has a national peat powder factory to make fuel dust for locomotive burn on the national railroads. These are matters of high importance in view of the necessity to conserve coal, and it is unfortunate that so little progress has been made in the country whose industrial greatness is bound up with the wise use of fuel.

Austrian Boots And Leather

A considerable part of the Austrian leather and boot industries has been socialised, and the details are of some interest. The industry will in future be directed by a Board upon which representatives of (1) the State, (2) the workers in the industry and (3) consumers are represented. The State representatives are three, two representing the Ministry of Trade and Commerce, and one the Ministry of Finance. The workers in the industry have four representatives who stand for both the manual workers and the salaried employees, three of them are chosen by the Works Council and one by the boot workers' trade unions. The consumers are represented by six members, three being chosen by the Co-operative Wholesale Purchase Company and three by the Agricultural Trading Association the general manager, as I understand it, is appointed by the Board itself. The net profits of the enterprise are to be thus divided one-fourth is to be taken by the workers, one fourth by the State, and one fourth each to the two co-operative associations. It does not appear that the undertaking

covers the whole of the trade, it takes over certain State leather and boot works which were State-owned in the war. It is expected to manufacture nearly one million pairs of boots and shoes a year which represents about one third of the present output. The outstanding feature of this enterprise is the joint representation on the directorate of the State, the workers and the consumers. It will be remembered that the new German iron and steel control also embodies this feature.

Uncorrodible Steel

Stainless steel, it seems, was discovered both here and in America although the American inventor Mr Elwood Haynes, freely concedes that Mr Brearley of Sheffield made his discovery quite independently of any work done elsewhere. Both Mr Haynes and Mr Brearley hold patents in America and they are worked by a single corporation the American Stainless Steel Company. In an interesting paper recently read by Mr Haynes, it is stated that the non corrodible steel contains more than 8 per cent of chromium and for certain purposes may contain as much as 60 per cent. Chromium has so long been used to harden steel that it is somewhat remarkable that the discovery was not earlier made that a considerable proportion of it in alloy would give us a rustless steel. (Observer)

THE SHOE AND LEATHER INDUSTRIES

The half year which has closed has been one of the most unfortunate in the history of the shoe and leather industries for several decades. The year opened with fair prospects and during the first three months there was a reasonable expectation that business would continue its normal course. Early in April, however there were happenings which began to tell against trade interests and from that date onward matters became gradually worse. The hide markets following de control, assumed a position in conformity with those ruling in America and values hardened materially. This aroused uneasiness amongst tanners, because they were finding a lessening demand for their finished products. Through the instrumentality of the Tanners' Federation, a scheme was inaugurated for reducing the import of hides with the primary object of curtailing cost, and that had the effect for a while of steadying the market, and subsequently of bringing into use much cheaper hides. Many of the factors and also a number of tanners, who had salted stocks in hand sustained severe financial losses in consequence. In June, quotations again hardened, and at the end of the month values had regained nearly their former position.

From the tanners stand point, and especially those producing boot leathers, the six months has been seriously disappointing, and the turn of the year has found them holding exceptionally heavy stocks, with a very limited demand and prices weakening. The sole leather now coming on to the market is the product of hides costing many pence per lb. more than current rates and the percentage of loss will thereby be aggravated. With the exception of the better grades of light and medium substance, which have sold with moderate freedom to meet the requirements of the summer seasons trade, all classes have declined and many large prices have exchanged themselves into sensational reductions. It would not be true to say that the slump is universal because there are those who are determined to hold on in the expectation that the market will take a more favourable turn. The decreased supplies of leather coming through the tan yards, perhaps give that policy an aspect of security although some think that it will fail in its object.

The root of the trouble is the disastrous state of the Continental financial exchanges. Had they regained something approximately near ordinary values, the export of both upper and bottom leather would have been abnormally heavy. In spite of the disadvantages existing, the despatch has been moderately good. It is the opinion of some well informed members of the trade that France, Belgium, Italy and Scandinavia could among them have more than consumed the surplus products of the English market had conditions been favourable. The economic strait in the home country has had its effect, and there is now more sole leather stored in the warehouses of tanners and factors than was ever known before. Under these exceptional circumstances it is cause for wonder by many that the break in prices has not been more pronounced.

Dressers of boot upper leathers have had an almost equally unfortunate period of trading. The stocks of East Indian pelts and hides have for the past two or three years been far beyond the necessities of the trade and their presence has been a menace rather than otherwise. Values have been unstable and when shippers began direct trading following the withdrawal of the Government's supervision of the Indian market prices took a downward course. They are much weaker to day than at

the beginning of the year, but, strange to say, the factors in Madras and Bombay are advocating a 'hold on' policy. Carriers throughout the country nearly without exception are working short time and the decreased production is more than the market for the finished article can handle. Box side leather has been the principal output and there are many millions of feet awaiting a more favourable business advent. Fine leather in gait and brown and black calf have been the favourites and dressers of these are more favourably placed than those making the heavy grades. Some firms however are reported to have large holdings of calf.

The boot and shoe industry was probably the first in the country to feel the pinch of the economic strike. From the time of the armistice manufacture began steadily to overcome the demand and hindered by the millions of new and repaired army boots which demobilised men brought them back, the score of auction sales under instructions from the Ministry of supplies the trade in the heavy grades suitable for artisan workers, has been working under a serious disadvantage. In addition the public became alarmed at what they considered to be the extortionate prices demanded for their footwear. Sales have in consequence since the early spring been below the average and as in leather, so in boots and shoes the accumulation are occasioning serious financial inconvenience. Wholesale and retail factors are very heavily stocked and according to present appearance many lines will be held over for another year. All sections of the industry are affected, but such centres as Leeds and King's Wood are the most directly concerned because of the manufacture there of goods for the working class public. Efforts are being made by a mutual jobber to break the market but there is as yet no permanent decline. Producers are in special instance quoting higher prices to day than the months ago and it is undoubtedly true that for sound and reliable goods full current prices must be maintained. If the public will be persistent in their demands for the supply of standard quality boots and shoes which are the warranted productions of 200 members of the Boot Manufacturers Federation, and with the output of which the officials of the Government have taken some responsibility they are in safe hands both as to cost and wearing properties.

(Yorkshire Post)

Trade opportunities in the foreign market should not be neglected by Indian interest while other nations are establishing themselves in the field. Leather Trade in India. By importing skilled workmen from England, the enterprise of a leather combine aims at capturing the native Boot and Shoe market in India.

INDUSTRY AND TAXATION.

Warnings by Sir E Mackay Edgar and Sir C W Macara

In a contribution to the July issue of *Dyes Trade Magazine of Business*, Sir E Mackay Edgar, Bart., says — The announcement of a higher excess profits duty coincides with the first sharp pre warnings that industry in Great Britain is nearing a crisis

It is a crisis, as I see it compounded of many elements First, in all the leading industries of the country there is, I think without exception a more or less deliberate policy of under production In the case of coal this under production is on so great a scale as to threaten by itself a period of approaching paralysis Secondly labour has so insistently increased its demands for wages and has in many and perhaps in most, instances been forced to do so by the soaring cost of living, that industry is working under the quite fatal disability to having to pay a maximum wage not, as it would gladly do for a maximum output but for a minimum output

Thirdly, the transport of the country is still painfully disorganised Fourthly, the cost of all raw material of all repairs and renewals, and of all constructional work has risen to such abnormal heights that it takes to day anywhere from five to ten times the capital that was required before the war, even though the volume of business actually done is very considerably less than it was

The Crux of the Trouble

Thus, then, is the crux of the trouble ahead The pressure upon the credit resources of the country is becoming so tremendous that it cannot be borne Capital is drying up before our very eyes, the banks simply

have not the money to carry on the national industries, from all over the country comes the same tale of contracted credits It seems to me we are likely to have a stern but in the long run, a salutary object lesson in the functions of capital as the motive power of industry

Events in the end will compel us to recognise that Budgets of £1,400,000,000 are more than we can afford if anything is to be left over for industry that a fair day's pay can only be given in return for a fair day's work and that Governments who seek to control the operations of demand and supply and to put trade in a bureaucratic strait waistcoat are either worsted in the encounter or ruin the country by prolonging a hopeless struggle

The Intolerable Strain of Taxation

In an article he contributes to *Business Organisation and Management* for July on The Industrial Dilemma and the Way Out Sir Charles W Macara, Bart., says —

The increase of the excess profits duty is thoroughly unsound, since it means intensifying the strain on the resources of industry just at the time when it is in greatest need of help in the way of extra capital It means sipping the life blood of industry The regaining of our pre war export trade would be comparatively easy under existing conditions were it not for the depressing effect upon enterprise of such heavy and uncertain taxation, and it seems to be overlooked that our export trade is essential to our very existence and that we are much more likely to be able to liquidate our war debt out of the profits of industry than by anything that may be raised by excessive taxation which would have the effect of strangling industry (*Financial*)

THE MADRAS COMMERCIAL MUSEUM

The Progress of the Indian Industrial Development will be greatly accelerated by the Madras Commercial Museum which will be incorporated very shortly with the object of promoting the interests of the indigenous industries and trade by bringing the producers and buyers together

Post Box 353, Madras, S C

HAND-LOOM WEAVING IN MADRAS.

The following are extracts from the report of the Director of Industries dealing with the work done by his department last year for encouragement and development of the hand loom industry prevailing in several districts of the Madras Presidency.

The position of hand loom weavers and the possibility of improving the craft have been under consideration for the last 20 years, but for various reasons no settled policy has been laid down and since the closing of the Salem factory no definite programme has been followed. The activities of the department were during the year under report as in preceding years confined to two peripatetic weaving parties. Now that the war is over the Director feels it is possible to take up the question of hand loom weaving in earnest.

In Velur, Arni, and Golvattur in North Arcot district we find a high standard of decorative work. For the most part however the hand loom weavers are engaged in manufacturing coloured saris of count Nos. 20 and 30 and 8000 looms are normally employed on this class of work. In the manufacture of men's cloths only 1,000 looms are engaged. There are two hand loom factories, one at Kuppam used in the manufacture of quilts, sheets and pillow cases, the other at Narayanur engaged in weaving cloths of higher count. Warping mills are in common use and the fly shuttle is employed in almost every village. Varinished beads and warping mills are manufactured at Gururajpet. The weaving party introduced 2 fly shuttle shays, one jacquard and 11 looms for weaving tapes, silk ribbon and sashes. In addition, they held demonstrations of dobbers in 25 villages and sold 65 to the weavers for use in border weaving a process which had previously been carried off by more laborious methods.

The party was then transferred to Kurnool and Anantapur in order to arrange for the manufacture of army blankets among the cumbli weavers. The scheme was set on foot at once the centres of operation being Nandikotkur in the Kurnool district and Beluruppa in the Anantapur district. Fair progress was made in Beluruppa where the weavers exhibited unusual power of adjusting themselves to new processes which the production of army blankets demanded. With such wool as had been retained by the Kurubas, 1,500 army blankets were manufactured, although the period between the commencement of organisation and the closing of operations was less than two months.

There is fair evidence that the hand loom weaver in wool in the Kalyandrug taluq will respond to any attempts made from an industrial or co-operative point to better the conditions amidst which he lives and works. In Anantapur and Bellary districts the weavers are more numerous in proportion to the population than elsewhere. For silk weaving, Dharmapuri is the most famous centre for cotton saris, Uravakonda. Other centres are Yadhik, Krishnapur, Gooty, Piddapuram, Kalyandrug and Lalpatti.

Weaving Party No. II operated in two areas — Piddapuram and Bellurpatti. Piddapuram is a noted centre for the manufacture of cotton and silk cloths. The silk (Chinese and Italian) is obtained from Surat and from Japan. It is purchased bleached or dyed. In cotton the chief manufacture is 'greys', including dhotees, uppers, turbans, shirting and cotton. The cotton yarn varies from 60s to 200.

In spite of the scarcity of yarn there were a many as 70 entrants for the silk weaving competition. There were three special prizes in addition to two awarded by Mr. M. Somaraju. The winner, Akisappa Kottalimam, wove 1 1/2 ins. of Surat silk cloth with a dobby pattern in the borders within one hour at 90 picks to the minute. The cloth was 48 ins. wide and contained 140 picks to the inch with 100 ends.

The work of the weaving party consisted of the demonstration of several warping mills, lattice dobbers and two looms. On one machine of each kind was introduced besides fly shuttle shays and accessories. A society for the wholesale purchase of yarn was founded at Bellurpatti the chief weaving centre although in other days the Chittole mashing was of wider renown. In Bellurpatti both silk and cotton weaving are carried on the coloured silk cloth being famous. The silk is obtained from Mulda, and bleaching and dyeing are carried on locally. Of indigenous dyes only Indigo (red) and kuppala (crimson) are used. The weaving class attached to the Municipal School in Desha Bhehra Street was recognised and a complete plant consisting of a frame loom, warping mill, pie looms and accessories was supplied to the school. At Parakkannadi at the request of the Rajah, a weaving school was equipped and opened with a complete set of appliances and a trained maistri supplied.

In November the party transferred its head quarters from Berhampur to Ichapuram in order to superintend the work of a Co-operative Credit Society which had been financed by Government as an experimental measure of relief. The economic condition of the weavers had sunk low owing to the high price of yarn and of foodstuffs, and they had been reduced to semi-starvation or emigration. Government stepped in with a scheme on the lines adopted by Messrs. Best and Co., at Berhampur, whereby yarn was purchased and supplied to the weavers on credit and the manufactured cloth was taken back from the weavers at fixed prices. The Society started with fair prospects but then yarn had cost 12 rupees a bundle, and when with the armistice the price of yarn fell like a rocket the local merchant was able to lure the weavers from the Society. Had the price of our yarn been reduced to the market rate this result might not have happened, and the experiment might have withered the storm more easily.

The Society charges a commission on sales and levies nine pies in the rupee on the wages of members. These charges operating with the high price of yarns supplied, almost resulted in shipwreck but by granting a bonus of one rupee a bundle over and above the fixed wages of five rupees a bundle to all weavers who weave more than three bundles a month we have retained sufficient members in the Society to keep it as a going concern. There are now 62 working members and in spite of heavy overhead charges the Society in four months earned a commission of 190 rupees and the transaction resulted in a profit of 456 rupees or a turnover of 7,500 rupees. With increased membership the profits would with the same overhead charges be proportionately greater. No lessons can be drawn from the experiment however for the Society has been kept going not by the weavers themselves, but by the Government Superintendent Mr. Swaminathan and by three private gentlemen (*Textile Recorder*).

INDUSTRY AND FINANCE.

BY HARTLEY WITHERS

EVERYBODY KNOWS that the world is at present a very uncomfortable place to live in and most of us think we know why, and how things could be made much better if only somebody else would work harder, or if the Government would ask us for less taxes, or if somehow or other things were different. The papers are full of protests from bankers and business men concerning the manner in which the huge expenditure of the Government is drying up the resources from which industry's capital has to be found while on the other hand the *New Statesman* point out that the evidence of extravagance on all sides, and the lavish expenditure on palatial country houses, steam yachts and costly clothes, motor cars, furniture, &c. shows that there is still a great margin which the Government could tap if it knew how to set about it. Is this latter argument wholly convincing? People certainly are spending freely, but not I think nearly as freely as they were and in any case human nature being what it is, a certain number of people always will spend a large amount of money on these kinds of extravagances and will continue to do so as long as they can possibly afford it. Because they are doing so it does not follow that the Government's expenditure is not trenching on the supply of capital. Many people who would save if they were not taxed so high retrench on their saving before

they retrench on their personal expenditure and the fact that they are still spending freely may be quite compatible with a reduction in the available sum of saved capital.

It may be very wrong of them to do this but we have to take human nature as it is, moreover in normal times there is something to be said for the view that a certain amount of expenditure on the pleasures and amenities of life does good to many people who enjoy them and many others besides, and is in fact one of the baits which is held out to us as inducements to that effort without which economic progress is impossible. It is all a question of degree too much luxury at all times is wicked and it may be argued that in present circumstances all luxury spending is to be deprecated, but these counsels of perfection cannot be enforced without a complete change of outlook in the minds of most of us and when we consider what can be done it is not much use to discuss what the result would be and how much margin would be available if every body were to confine themselves to the necessities of life because to induce them to do so would take so long in our present temper that the crisis to be dealt with would either have to be solved in some other way, or would be found to be incapable of solution. Nevertheless, seeing that it is all a question of degree and that everybody by their own action can do something to

help the present economic problem it is just as well that it should be put before us clearly and that the solutions proposed by broad minded thinkers should be carefully weighed

In the comparative prosperity enjoyed by this country we are too apt to forget that the discomforts which we now suffer are trifling compared to the hardships inflicted on many of our fellow creatures abroad. In an article in a recent issue of *Ways and Means* headed "The World Crisis, a Suggested Remedy" Sir George Push has published and illustrated with a wealth of carefully prepared statistics a statement of the world's present needs and the solution which he suggests for meeting them. Economically, he says, the war has had consequences which cannot be quickly or easily overcome. First it has caused a great curtailment of the productive power of all the belligerent nations, no less than ten millions of the most able bodied men of Europe have been killed or have died of disease and many millions have been so severely wounded that their labour will be permanently lost. A second factor is exhaustion which has been increased by the conditions of peace, the prospect of making reparation payments has paralysed the defeated peoples while the prospect of receiving them has paralysed the peoples of France and Italy. The third factor is that the great mass of the people of Europe burnt during the war the value of their labour and are no longer willing to work for long hours for a mere pittance. In every country there are demands for higher wages, shorter hours, and better conditions. Finally, with burdensome taxation and deficient production, the supply of capital everywhere is inadequate to the need.

'Compared with pre war conditions Europe's productive power has been reduced between thirty and forty per cent, while its desire to consume has increased rather than diminished. Moreover the peoples of Europe, capitalists as well as labourers, have an exaggerated idea of their power to purchase brought about by the immense profits made during the war, as well as by the great advance in the rate of wages. Thus while the quantity of things available for consumption is greatly diminished, national purchasing power has increased enormously.'

This statement seems at first sight to be rather paradoxical. If there are less goods available to be consumed, it surely is not really possible that purchasing power, whether national or individual, should have increased, since real purchasing power can only consist

in the amount of commodities which the nation or individual is able to get and if the things to be brought are less the power to purchase them must be less also. Presumably, Sir George is referring to nominal purchasing power expressed by the quantity of more or less debased money which is now current in all the countries of the world while its actual purchasing power as we all know to our cost is very greatly reduced because owing to the causes enumerated above, we are not delivering the goods as we used to. Sir George Push says that Europe's productive power has been reduced by 40 and 40 per cent and Mr McKenna, in the course of a recent speech told the shareholders of his bank that its funds production is now only about 80 per cent of what it was before the war.

As long as this diminished production is a continuous factor however much purchasing power we may think we have in hand, we cannot expect to enjoy anything like the comfort that we had before the war unless we have the good fortune to be numbered among those in whose hands the supply of purchasing power has increased even more rapidly than its effectiveness has been diminished, but the problem to which Sir George Push wishes particularly to call attention is of course the international aspect of the case. As he points out "Production has greatly declined in many countries, but not in others, and those countries whose productions have declined cannot pay either in things or in services for the produce they need to buy from the countries whose productive power has not declined. World production is far below what is needed, but international purchasing power is not equal to the world's productive power, thus the world is faced to face with a famine in things and a famine in international money and a famine in international credit. For example, we whose productive power is reduced comparatively little suffer from the great decrease in Europe's productive power because our European customers cannot produce goods and services to pay for all the goods that they would like to buy from us. Superficially said Sir George Push the situation of Great Britain is satisfactory but fundamentally it is very unsatisfactory. Great Britain during the war has sold very large quantities of goods to the continent and has had to take payment in securities and to the extent she has been paid in securities or by credit operations, she has also needed to sell securities or to borrow.

This is the situation that has to be faced. Great Britain cannot collect payment for more than a small part of the goods she sells to the continent, and has to pay for all the goods

she buys from other countries. The situation is the more serious as these outside countries supply Great Britain with almost the whole of the food and raw material which she urgently needs.

His problem cannot possibly be solved unless she can secure payment in one way or another from the continent in international securities that she can sell again to the outside countries from which she is herself compelled to buy her food and raw material."

The suggestion of international securities which presumably mean securities with some sort of international guarantee, is immediately seen to bristle with difficulties. But Sir George gives many interesting examples of the problems that arise under the present state of things. "New Zealand," he says, "sells its produce mainly to Great Britain, while she buys large quantities of goods from Australia, from the United States, and from other countries. If Great Britain cannot pay New Zealand in some kind of international security that New Zealand can use again to pay for the goods she needs to buy then New Zealand will be unable to purchase the goods she needs from many of the countries that now supply them."

Thus it appears that to a great extent our trade is apparently unprofitable. We are selling to countries who cannot pay us, and we have to pay the countries from which we buy. Nevertheless, one cannot help feeling a certain suspicion that the position is far as we are concerned is not quite so uncomfortable as it seems from this point of view. We have to remember that our trade is being carried on by an exceedingly shrewd set of people, who are not likely to be selling very much to customers from whom they have not good reason to expect payment at some time or another, and that they are not selling more on a prospect of future payment than they can afford to part with for the time being, and so lock themselves up with an unredisable asset. In so far as they are doing so—that is to say, in so far as they are making investments abroad by selling goods on unjust promises of future payment they are to that extent building up our position as the world's capital provider which we held before the war, and it is really true that we are all the time borrowing from the countries from which we buy goods. According to what one hears in the City it is rather the other way round. Other countries including even America are coming to us in these days for credits. But even if the situation is as serious as Sir George Paish describes it to be, and it need not be said that he writes with very high author-

ity as a statistician and economist, let us then consider whether the remedy that he proposes is practicable. In brief his proposal seems to be for the creation of an enormous mass of League of Nations' Bonds.

To begin with he suggests that a total sum of £2,000,000,000 might be raised on the strength of Germany's credit, provided that everything possible were done to restore Germany's productive power, and to supply her with the working capital she needs. This amount would, however, include credits she requires to cover her productive power, which Sir George estimates at £600,000,000 sterling. For some years, as he admits, Germany would not be in a position to pay the annual sum required for interest and sinking fund upon a loan of £2,000,000,000, and provision would have to be made for funding the interest on whatever obligations were issued until Germany's productive power were re-established, and she was able to provide for the service of the loan out of current income. Thus we see that even before we get to the great issue of securities by the League of Nations, we have to begin with a preliminary issue of £2,000,000,000 by Germany, subscribers to which would be faced with the certainty that they could receive no interest upon their money for some years, unless they were prepared to lend the money to Germany to pay themselves by means of funding operations. Is this really a possible financial scheme? Can we expect to see ourselves opening our *Times* one morning and finding we are asked to subscribe to an issue of £2,000,000,000 German Bonds, the interest on which will certainly have to be funded? And if so, how many people would subscribe to such an issue and how much? Can we see bankers and stock-brokers recommending it? Who is going to find this money for Germany? A large number of people certainly believe in Germany's ultimate recuperative power, and there can be no question that the 70,000,000 of industrious people who live in Germany will ultimately become once more a great producing people. But does it seem likely at a time when in all the countries of the world there is great demand for capital at highly remunerative rates for purposes of home development, people would be found who would be prepared in view of Germany's present economic and political uncertainties, to put their hands in their pockets for her benefit to the extent of £2,000,000,000 or even of £200,000,000?

And when this little difficulty has been got out of the way, we are then apparently to go on to the issue of a £4,000,000,000 loan, the service of which is to be placed

upon individual countries capable of meeting their liabilities a limitation of direct liability but with a common liability, to make good deficiencies. In other words there is to be some kind of joint and several guarantee, so that every country which took part would make itself liable for the deficiencies of all those which could not or did not, pay their proportion of the bill. Is this again a business proposition? Can we see the Chancellor of the Exchequer asking Parliament for power to make the British Government liable directly for part of a £4 000 000 000

loan and indirectly for any failures in its service which may be committed by any other countries, taking part in the operation? The British Government at present cannot borrow more than a quite peddling amount per week even for the purpose of funding its floating debt. Even if Parliament gave it the power to take part in a huge international operation of this kind how many millions would it succeed in raising from the investor to whom it appealed? If Sir George's suggestion is really the only way out, we seem to be a long way from a solution.

(The Guild)

NEWS AND NOTES.

The French Government have prohibited the importation of luxuries into France of the following description in which India is seriously interested -

Cut precious stones, true pearls, woollen carpets made with knotted or twisted pile including imitations carpets of wool mixed with other materials, fabrics of goat hair, many kinds of silk fabrics, trimmings, ribbons and braids of pure jute.

In addition to these the following are referred to as requiring licenses under decrees already in force.

Tobacco, mineral oils for illuminating purposes, heavy oils and residues of mineral oils.

The Government of the Union of South Africa will provide free passages only to Indians who ask for them in writing and who sign as a condition of the grant of the passage a statement that they abandon on behalf of themselves their wives and their minor children (if any) all their rights to enter and reside in the Union together with all rights incidental to their domicile therein.

2 It is understood that the Government of the Union of South Africa have placed Mr. Wynne Cole, licensing officer for Natal, on special duty to carry out the scheme, and that Indians leaving South Africa will be allowed to take legitimate savings in gold subject to a maximum of £ 25 per head or £ 50 per family.

All coal required for bunkering purposes in Indian ports other than Calcutta says a Press Communique should be carried by sea instead of by rail route. Taking into account the restrictions recently imposed by His Majesty's Government on exports of coal from the United Kingdom and the prohibition of exports under license from South Africa, the Government of India have decided to prohibit the export of coal from India except under license from the 24th July 1920. All coal leaving Calcutta by sea can be shipped under a

license from the Collector of Customs Calcutta. No coal should be released for export from any port other than Calcutta except for fuel use on voyage. Kidderpore Docks will handle 250 000 tons of coal per month for use of the Royal Indian Marine Burma Madras and Ceylon Railways and for bunkering at Indian Ports and at important ports in the vicinity of India.

The establishment of Panchayat Court in 21 villages in the Krishna District in addition to those already established in 45 villages of the same District has been sanctioned.

Panchayat Courts will be established in 17 villages of the Godavari District and in 106 villages of the Madura District.

The Agricultural Department has been strengthened by the creation of 10 new appointments sanctioned by the Secretary of State as follows -

- 3 Deputy Directors of Agriculture
- 2 Economic Botanist
- 1 Assistant Principal Agricultural College
- 1 Second Agricultural Chemist
- 1 Agrostologist (expert in grasses)
- 1 Soil Physicist
- 1 Bacteriologist

Thus one Dy. Director of Agriculture is provided for every three Districts in the Madras Presidency. The Dy. Directors of Agriculture are responsible for the planning and supervision of the experimental work carried on at the various agricultural stations in their circles and for the general district work of the Department e.g., the organisation of the sale of improved seed and special manures and the conduct of demonstrations of improved methods of agriculture in the villages. Besides these Deputy Directors who possess an all-round knowledge of agriculture the Agricultural Department now includes the following posts for men, who have specialized in some particular branch of science connected with agriculture -

Posts for 2 Agricultural Chemists, to analyse soils and give advice on their capabilities and the manures required to supplement their defects

- 1 Soil Physicist, to investigate the physical conditions of soil especially in regard to their water holding capacity
- 1 Agrostologist to study and improve our fodder grasses
- 1 Bacteriologist, to study the changes in plant conditions caused by bacteria
- 1 Entomologist, to devise means of fighting insect pests
- 1 Mycologist, to do the same service for us against the fungi which attack the crops
- 1 Agricultural Engineer, to study and improve our agricultural implements

Some of these officers are also required to take part in the teaching at the Agricultural College

The Madras Lunatic Asylum established in 1795 has been working well for the past 120 years. A new outpatient department is opened at Fococks Gardens, Kilpauk, where advice regarding all cases of mental illness is given by the Superintendent of the Asylum. Special provision is also made for better class patients and a special kitchen for high caste patients is being attached.

Health Lectures. The Government of Madras have invited the South Indian Health and Welfare Association to prepare a scheme in consultation with local bodies for carrying on the health propaganda work throughout the Presidency.

The Divi Island is a tract of 150 square miles of land at the mouth of the Krishna River. In 1901, Mr R N H Reid was placed on special duty to investigate the possibilities of irrigating the Island by improving the supply of water from the river at Puligadda. 8 Diesel Engines of the latest type and eight 39 inch centrifugal pumps were installed and pumping was started in 1907. Large channels and sluices were completed in 1908. There was at first some difficulty in finding enterprising ryots willing to invest capital. Owing to the prevailing high prices of paddy, the ryots were induced to take to cultivation. 34,000 acres of land have been irrigated and a further increase of 14,000 acres is expected.

The Registration Department. Extension of facilities for registration have been allowed by the Government

by opening 25 new Sub-Registration Offices and 8 District Registration Offices by way of bifurcation of the already existing Districts.

In our November issue, under 'Indian States' the paragraph on Paper-making and Match-making, which appear below Industries in Travancore were written by Dr Fowler for Hyderabad and should have appeared under the heading Industrial Development in Hyderabad. We are sorry for any embarrassment which this mistake might have caused to Dr Fowler.

Panchamas in the Godavari.—A Special Deputy Collector with a staff is employed in the Godavari District in working for the amelioration of the Panchamas. Government lands are registered as village sites and assigned to them free of charge as house sites. Sometimes house sites are acquired for them. Sites for latrines are provided free of cost for which a special grant of Rs. 34,000 has been sanctioned by the Government. The improvement of drainage and sanitation is receiving attention. About 50 wells are sunk and the sinking of 70 more wells is in progress. Government lands are reserved for their burial grounds. 43 Panchama Co-operative Societies have been registered and 30 more are being organised. About 1000 acres of lands are leased out to 12 Panchama Co-operative Societies. 24 Night Schools and 6 Day Schools are started. There has been a decided awakening in the Panchamas who have begun to realise the value of education and co-operation.

Enhanced Postage Rates.—The recommendations of the Postal Committee in regard to the pay of postmen, inferior servants of the Post office and Railway Mail Service and Postal runners have been accepted by the Government of India with effect from the 1st December 1919. It is estimated that the additional expenditure involved in the revisions of pay of the Post and Telegraph Department will amount to considerably more than 1 Crore of Rupees per annum. The question of enhancing the inland postage rates is now seriously engaging the attention of the Government of India.

In view of the representations from the principal Chambers of Commerce in the matter of assisting the development of civil aviation in India, the Government of India have decided to reduce the customs duty on aeroplanes, aeroplane parts and engine parts from 7½ per cent. to 2½ per cent. *ad valorem*.

COMMERCE AND INDUSTRIES.

Britain and India Magazine

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PRESS OPINIONS

The "Journal is well printed and the number before us is interesting and has been compiled with discrimination and care"—(*Madras Mail*)

Commerce and Industries —To those who are interested in Indian Trade in fact, to all those people who are desirous to know about the industrial development of our great Indian Empire, we can strongly recommend this monthly Journal. A perusal of its pages month by month will, we are certain, enlighten them as to important developments which are continually springing up in our richest possession. Each monthly issue contains a special contribution of considerable interest, that under reviews gives a most enlightening article on the Paper Pulp Industry. There are other useful notes on agriculture generally, which are certainly educational for those who have not, up to the present, realised how far advanced the science of the farm has become in India. Anyone who wishes to receive this exceedingly interesting and instructive Journal regularly can make arrangements with the Editor, whose address is 5, Mount Road, Madras, INDIA—*Basar and Exchange (London)*

We have received a copy of *Commerce and Industries* —A Monthly Journal of Indian Material Progress. It contains exceedingly useful and practical articles on all questions affecting this important side of Indian development. Such subjects as Trade, Finance, Industries, Economic Development, Agriculture, Indian Tariff Reform are discussed—(*Britain and India, London*)

Commerce and Industries —The Journal contains many useful and informing articles "It is full of valuable information on different topics relating to trade and industry of foreign countries as well as that of India"—(*New India*)

Commerce and Industries —Contains useful editorial criticisms on important subjects —(*The Liberal*)

Commerce and Industries —This well-conducted and useful monthly, in its issue for May, as usual, contains a number of original contributions on matters of educational and business value * * the current number also contains a fund of useful information on Industrial and Commercial subjects—*The Hindu*

We have received a copy of the **COMMERCE AND INDUSTRIES**, a Monthly Journal, published by Mr G. Narasimham, F.R.S.A., F.A.A., 5, Mount Road, Madras, India. It contains many interesting and informing articles on the economic condition of India. Indian currency, banking, agriculture, industry, etc., are lucidly and masterfully discussed. To those who are interested in Indian trade, it will prove a valuable guide —*The Asian Review*,

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- ii To supply information to persons interested in Trade, Industries and Commerce
- iii To promote the extension of Inland and International trade of India by bringing before buyers in all parts of the world exhibits of the Industries, Inventions, raw materials and the products of the Indian Empire

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- 1 The exhibition of samples of indigenous and foreign products, raw materials, semi manufactured and manufactured articles, machinery, tools, models, designs and specimens of arts.
- 2 The exhibition of samples of goods imported into India from foreign countries.
- 3 To encourage the cottage workers and smaller Industrialists to find a suitable market for their products
- 4 To demonstrate the manufacturing processes whenever practicable with the aid of experts and exhibitors
- 5 To effect the sales of the articles exhibited on terms and conditions mutually agreed upon with the exhibitors
6. To maintain an Enquiry Bureau to supply information to the exhibitors, merchants and others
7. To publish Catalogues, Annual Reports, Year Books, Periodicals, Journals, Leaflets, Notices, Circulars, Hand-Bills, Directories, Books of technical and special interest and Advertisement in any manner to promote the objects of the Museum
8. To collect and disseminate statistical and other information relating to trade, commerce and manufactures
9. To aid and assist in any possible manner Indian workmen, artisans, craftsmen, and manufacturers with a view to promote, develop and encourage indigenous manufacture of goods of all kinds and to help the indigenous producers by way of profitable distribution of their goods

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